Technical Report 1317

Measuring Learning and Development in Cross-Cultural Competence

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361 Interactive, LLC

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14. ABSTRACT *(Maximum 200 words)*:

For deployed U.S. military personnel, cross-cultural skills are more important than ever before. Cross-cultural competence is critical to mission success, and specifically, because Soldiers can no longer predict where their next deployments may be, *general* cross-cultural competence (the ability to immediately adapt and assess in culturally unfamiliar environments to support mission success) is emerging as a critical competency. In the performance of this Phase II SBIR research and development effort, the research team conducted Cognitive Task Analysis methodologies with more than 400 Soldiers to create a developmental model of Army cross-cultural competence. This model describes the development of the knowledge, skills, aptitudes, and abilities that comprise cross-cultural competence in Army small unit leaders. Five unique, but interacting, factors of cross-cultural competence were identified through the research. The resultant model serves as a basis for an assessment methodology that includes self-report measures, situational judgment tests, and cultural vignettes. The model and metrics provided the foundation for the Cross-Cultural Assessment Tool (C-CAT), an online program that assesses an individual Soldier's cross-cultural competence and provides mission-relevant competence ratings, descriptions of individual strengths/weaknesses and how these can impact mission performance, and suggestions for improvement.

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Measuring Learning and Development in Cross-Cultural Competence

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MEASURING LEARNING AND DEVELOPMENT IN CROSS-CULTURAL COMPETENCE

EXECUTIVE SUMMARY

Research Requirement:

For Soldiers in the contemporary operational environment, performance beyond typical military technical and tactical skills is increasingly required. For example, Soldiers must effectively interact with, engage, and persuade local populations in foreign countries to achieve mission objectives. While many cultural training initiatives are currently operational, the lack of a sound method for assessing cross-cultural competence (3C) in Soldiers leaves their effectiveness uncertain. To ensure that Soldiers are adequately prepared for the challenges of active duty in unfamiliar cultures, 3C must be clearly defined and assessed at the individual level. With these objectives in mind, this Small Business Innovation Research (SBIR) research effort had two main thrusts: (1) model the development and components of 3C at the tactical level, and (2) develop a battery of metrics that reliably and validly assesses Soldiers' 3C.

Procedure:

In Phase 1 of the current effort, the research team leveraged cognitive task analysis methodologies with more than 400 Soldiers to create a developmental model of the knowledge, skills, aptitudes, and abilities (KSAAs) that comprise Army cross-cultural competence. Data were compiled and analyzed with a focus on identifying patterns and frequencies in the presence and/or mention of specific KSAAs and an initial set of cognitive, affective, and behavioral KSAAs were identified as representing an overall 3C construct. Within this preliminary 3C model, levels of competence were also identified and represented in order of increasing competence (e.g., precompetent to advanced).

The goal of Phase II was to refine the Phase I model and develop a battery of metrics for assessing Soldiers' 3C. After revised the initial set of KSAAs to focus on those that were most relevant to cross-cultural competence development, the research team generated a self-report measure with items developed through a review of the relevant literature as well as team and critical incident interviews with Soldiers. Questions prompted participants to report on general behaviors and preferences as well as hypothetical or future deployment situations. To address the limitations of a self-report assessment approach, situational judgment tests (SJTs) and cultural vignettes were developed and added to the larger measurement battery.

Soldiers and ROTC cadets completed the 3C assessment battery comprised of a demographics questionnaire, self-report, SJTs, and vignettes. However, several modifications were made to the items administered to cadets to better relate to the cadets' experiences in a two-week summer cross-cultural immersion program. Cadets completed a pre-test version of a cross-cultural competence assessment battery, traveled abroad for approximately two weeks, and immediately completed a post-test version of the assessment battery upon return. Cadet

supervisors and peers also assessed cadet performance in a rate/rank questionnaire as part of the post-test.

Findings:

Five unique, but related, factors of cross-cultural competence were identified through the research. The resultant model serves as the foundation for an assessment methodology that includes self-report measures, situational judgment tests, and cultural vignettes. The model and metrics provided the foundation for the creation of a computer-based version of the assessment battery, or Cross-Cultural Assessment Tool (C-CAT). This online program assesses an individual Soldier's cross-cultural competence and provides mission-relevant competence ratings, descriptions of individual strengths/weaknesses and how these can impact mission performance, and suggestions for improvement.

Utilization and Dissemination of Findings:

The current study led to the development of a refined 3C model that characterizes the main components of 3C and defines the varying levels of cross-cultural competence. This model may inform future research efforts related to assessment development, wherein it is critical to understand and articulate the main constructs that comprise 3C. Additionally, the current research resulted in the creation of the C-CAT which is one of the few military-specific cross-cultural assessment batteries available to date. The use of this particular battery may assist in the identification of gaps in individual cross-cultural competence by highlighting areas of opportunity for improvement and suggestions for how to improve. Given that the customized feedback provided by the C-CAT is based on an individual's performance on the battery, results are directly applicable to the user. Finally, the C-CAT can be used longitudinally to assess changes in cross-cultural competence over time.

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MEASURING LEARNING AND DEVELOPMENT IN CROSS-CULTURAL COMPETENCE

For Soldiers in the contemporary operational environment, performance beyond typical military technical and tactical skills is increasingly required. For example, Soldiers must interact with, engage, and persuade local populations in foreign countries to achieve United States Army small unit leader mission objectives. The Army leadership recognizes this and is increasingly prioritizing cross-cultural training for Soldiers. While many cultural training initiatives are currently operational, the lack of a sound method for assessing cross-cultural competence (3C) in Soldiers leaves their effectiveness uncertain. To ensure that Soldiers are adequately prepared for the challenges of active duty in unfamiliar cultures, 3C must be clearly defined and assessed at the individual level. With these objectives in mind, this Small Business Innovation Research (SBIR) research effort had two main thrusts: (1) model the development and components of 3C at the tactical level,[1] and (2) develop a battery of metrics that reliably and validly assesses Soldiers' 3C.

The research community has struggled to agree on a consistent definition of 3C (see Abbe, Gulick, & Herman (2007) for a discussion of this issue). To accurately develop a model of 3C and build a metric that can assess it, an operational definition of 3C that captures the field requirements of deployed military personnel in novel cultural environments must be identified. To this end, the research team employed a rigorous mixed method approach to identify the components of operational 3C associated with effective performance in the field (Phase I of this (SBIR) effort). Critical incidents were elicited wherein Soldiers described the challenging aspects of cross-cultural encounters or assessments. In addition, team ranking task interviews were conducted during which Soldiers evaluated their peers based on perceived cultural ability, as well as simulation interviews during which Soldiers responded to cognitively authentic deployment scenarios. These data were compiled and analyzed with a focus on identifying patterns and frequencies in the presence and/or mention of specific KSAAs (knowledge, skills, abilities, and aptitudes). This yielded an initial set of 29 cognitive, affective, and behavioral KSAAs, which were later comprised to form an overall 3C construct. Within the preliminary 3C framework itself, four levels of competence were represented. Those levels, in order of increasing competence, were precompetent, intermediate, proficient, and advanced. Each level of competence was described in terms of the KSAAs that were present (or absent) in each component, as well as the levels of development for KSAAs within each component. A detailed description of the interview collection techniques, the initial set of 29 KSAAs, and the four levels of 3C development can be found in McCloskey, Grandjean, Behymer, and Ross (2009).

The initial focus of Phase II was to refine the Phase I model based on the data collected in Phase I. First, the initial set of 29 KSAAs was reduced to 16 KSAAs. Researchers compared the list of 29 KSAAs to 40 cultural learning statements and their definitions that were derived by a

[1] Although cross-cultural competence is important at the operational and strategic levels and future research should examine its impact on performance, tactical operations requiring direct contact and interaction with local populaces is an ideal starting point for describing cross-cultural competence. Small unit leaders are often the most prominent representatives of American foreign policy and their decisions influence not only immediate tactical situations but higher operational and strategic levels (Krulak, 1999). For a more in-depth discussion see McCloskey, Behymer, Papautsky, Ross, & Abbe (2010).

Department of Defense working group of researchers and operators (McDonald, McGuire, Johnston, Selmeski, & Abbe, 2008). From this review, we consolidated and revised the list to a smaller set of 16 KSAAs that we believed had less overlap, were relevant to the cross-cultural competence, and would be useful for further research.

Based on feedback from potential end users who suggested that a 16-factor model was too complex for their needs and that a more parsimonious model was needed, we continued to examine how to consolidate this group of 16 factors. Our next step was to generate a self-report measure; each of the 16 KSAAs (and a social desirability scale) were measured with eight items (four general items and four deployment-oriented items) for a total of 136 items based on Clark and Watson's (1995) suggestion that an item pool must be broad enough to cover the targeted content area. Four of these questions prompted participants to report on current behaviors and preferences (general items), whereas the other four questions asked participants about hypothetical or future situations (deployment-oriented items). To develop items for this measure, we examined items that sorters agreed addressed a specific KSAA from the team ranking interview, existing items in the literature, and raw data from the critical incident interviews. Items addressed agreement on what each cadet *would* do in a deployment situation and other potential behaviors on a 6-point Likert scale (1 = *Strongly Disagree*; 6 = *Strongly Agree*). The Willingness to Engage subscale is shown below as an example. The first 4 questions are deployment-oriented, while the next four are general.

Willingness to Engage:

1. Prior to a deployment, I would try to learn the basics of the language before going, whether directed to or not.
2. During deployments, I would seek out opportunities to experience the local culture.
3. If deployed, I would enjoy opportunities to interact with the people of that country and learn about their lives.
4. If deployed, I would avoid eating and socializing with the locals.
5. In general, I try to limit my interactions with strangers.
6. I enjoy meeting people who are different from me.
7. When I am meeting new people, I am willing to try new activities I wouldn't otherwise try.
8. I tend to get very engaged when part of a group discussion.

Due to time and access to participant limitations, our sample size for this initial analysis was 43 Soldiers, which was not large enough for a factor analysis. However, it did allow us to examine the correlations between the constructs. This examination resulted in a reduction of the KSAAs to five main factors: Cultural Maturity, Cognitive Flexibility, Cultural Knowledge, Cultural Acuity, and Interpersonal Skills. Figure 1 shows the KSAA consolidation process.

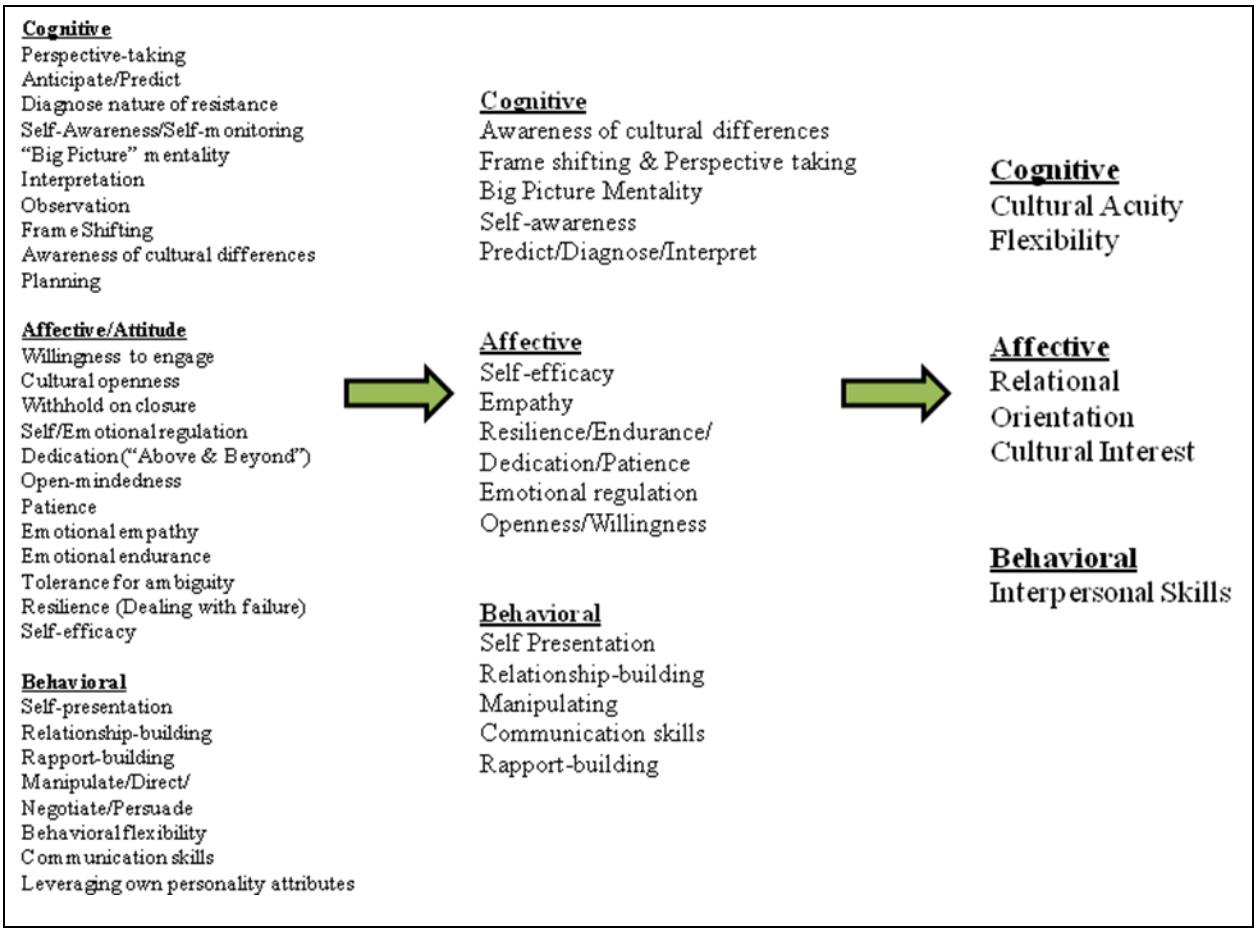

Figure 1. 3C KSAA consolidation.

Additionally, the 3C developmental model (which detailed the development of KSAAs at each of four competency levels) was modified based on both reviews of the expertise development literature and the collected data. The resulting model is shown in Figure 2. This figure depicts differing levels of 3C as concentric gradated pentagons, one for each level. For example, the inner area with the lightest shading represents a Level 1, Precompetent Soldier. An individual at this level may not be ready to benefit from the cultural knowledge and basic guidelines upon which more advanced Soldiers depend due to attitudes that impede the acquisition of this knowledge (i.e., learning). Only if individuals are past the Precompetent level can they begin to learn the important knowledge and skills necessary to achieve higher levels of competency. Moving outward, increases in shading density represent higher levels of overall 3C. Thus, Level 2 is more competent than Level 1, and so forth. Increases in each of the five factors, however, occurs at different rates for different levels. For example, the most substantial difference distinguishing a Level 1 from Level 2 Soldier is Cultural Maturity. Distinguishing Level 3 from Level 2, all factors show improvement, with the most substantial increase being in Interpersonal Skills. The overt behavioral abilities comprising Interpersonal Skills will be well-developed for the Level 3 Soldier, while factors such as Cultural Acuity and Cognitive Flexibility, which are more cognitively based, will still be limited. Finally, it is in Level 4 (Advanced), the darkest-shaded outer area, where cognitive factors (Cultural Knowledge, Cognitive Flexibility, and Cultural Acuity) show the greatest improvement, and it is at this level

that a Soldier is most accurate in his or her cross-cultural assessments and the most effective in actions. Cultural Maturity differences between a Level 3 and a Level 4 Soldier will be smaller, as the Level 3 Soldier will have already developed high emotional self-regulation and willingness to engage. A complete description of this process and the resulting model can be found in McCloskey, Behymer, Papautsky, Ross, and Abbe (2010).

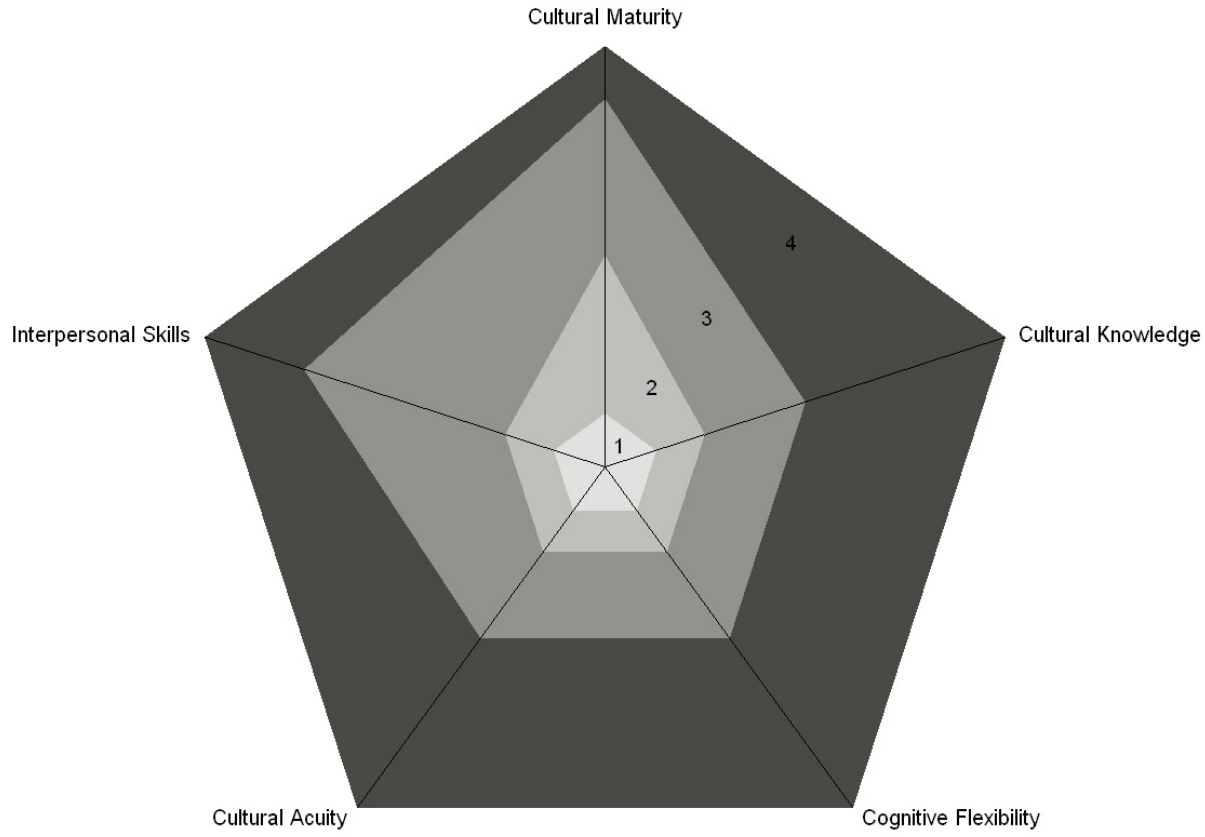

Figure 2. Initial developmental model of 3C.

Although identification of the aforementioned framework was essential to the conceptual development of 3C, there still exists a lack of means by which to assess it. Thus, the purpose of the present study (in fulfillment of Phase II) was to develop a measure of 3C, using the previously proposed framework as a theoretical guide. Multiple data collections with Soldiers and ROTC cadets were conducted to refine and validate the measures. These data collections led to a final refinement of the components of 3C and the levels of development within the model. Additionally, the cadet data established that participants' responses were consistent with peer and supervisor perceptions of their actual performance in the field, thus providing evidence of criterion-related validity. Findings from the Soldier data allowed the research team to establish construct validity as the different measures of the battery were significantly correlated. Finally, a computer-based version of the assessment battery was created that included the development of

customized feedback based on an individual's performance on the battery. This report describes the measures used in the data collections, the processes and findings underlying their modification, and the resulting model of 3C, as well as the computer-based assessment battery that can be utilized to assess 3C in military personnel preparing for deployment.

Method

Participants

Approximately 270 Soldiers (missing data points account for the variable sample sizes throughout this report), the majority of whom were male (97%) ranging in age from 19 to 52 (M = 30.59, SD = 5.72), were given our assessment battery. This sample was selected based on several factors. As stated in the introduction, our target respondents were small unit leaders operating at the tactical level. Thus, Captains and Non-Commissioned Officers comprised 83% of the data, with the most common grade being Captain (36%), Staff Sergeant (19%), and Sergeant First Class (19%). Additionally, we wanted to ensure that a large variety of Military Occupational Specialties were represented (a complete list of the MOSs of the Soldiers interviewed can be found in Appendix C, with Armor (26%) and Civil Affairs (18%) being the most common). Finally, due to the nature of Soldier availability, convenience played a role in the selection of participants. The majority of the Soldiers were Caucasian (80%), however, other racial/ethnic groups were also represented, including African Americans (10%), Latinos (5%), Asians (3%), Native Americans (2%), and Pacific Islanders (< 1%). Fifty-three percent of Soldiers reported their ASVAB general technical score, with an average of 114.22 (SD = 11.56). In general, Soldiers averaged eight years of service (SD = 5.22) and more than one deployment. Exposure to cultural training was quite varied across Soldiers. More than three-quarters (77%) reported having received more than 1 hour of cultural training; however, fewer than half of the Soldiers (41%) reported more than 1 hour of foreign language training. The amount of cultural training ranged from 0 to 200 hours. The amount of foreign language training received ranged from 0 to 1,000 hours.

Our sample also included an additional 171 ROTC cadets. These cadets participated in a 2-week cultural immersion program where they interacted with local populaces on a variety of humanitarian missions (locations included China, Ghana, Russia, Senegal, Mongolia, Egypt, Morocco, Taiwan, and Tanzania). At the request of Cadet Command, we also attempted to use the battery to assess the cadets' levels of 3C both pre-deployment and post-deployment to gauge the effectiveness of the cultural immersion program. According to Cadet Command, at the time of their deployment, the s, regardless of their scholarship status, had received the same amount of cultural training. This opportunity provided us with the ability to examine the reliability of our assessment battery, as well as the chance to establish construct validity, as we were able to collect both peer and supervisor ratings for the cadets. Because the effectiveness of the cultural immersion program was not directly relevant to the development of the 3C model or the assessment battery, the results detailing the impact of the cultural immersion program on the cadets' performance on our battery is provided in Appendix D.

Cadets were, on average, 20 years old (+/- 1 year). Only 15% of cadets reported their ASVAB general technical score, with an average of 96.04. Although the majority of the cadets

were Caucasian (87%), other racial/ethnic groups were also represented including Asian (5%), African American (5%), Hispanic (2%), Native American (1%), and Pacific Islander (1%). Most cadets (57%) reported two previous trips abroad and had a moderate level of prior cultural interaction (M = 2.88, SD = 1.11 on a scale of 1 to 5 where 1 = *No Interaction* and 5 = *Almost Constant Interaction*). Approximately one-third of the sample (34%) reported knowing no languages other than English.

Throughout the Results section of the report we will indicate which results are based solely on cadet data and which are based on a combination of Soldier and cadet data. For some analyses, the two data sets were combined because the advantages (increased statistical power, increasing the range of possible skill level) outweighed the disadvantages (the difference between Soldiers and cadets). Additionally, the fact that 3C does not necessarily increase as a result of deployment experience, amount of cross-cultural interaction, or years of service served to minimize the differences between Soldiers and cadets in terms of 3C ability.

Materials

The measures used in the current effort were designed to be comprehensive in gathering information on participants' (both Soldiers and cadets) demographics, backgrounds, and experiences, as well as actions taken in potential deployment situations collected via both quantitative self-report measures and qualitative scenario-based measures of situational judgment tests (SJTs) and vignettes. Described below are the measures of the 3C assessment battery that were administered to Soldiers and cadets. The implemented modifications and the configurations of measures (versions of the assessment battery) that were administered to the different samples of participants are described in subsequent sections.

Demographics questionnaire. A demographics questionnaire developed as part of the Phase I effort was included in the assessment battery. Participants were asked to report their age, gender, ASVAB general technical score, and race/ethnicity. In addition, participants were asked to describe the amount of cultural interaction they had had, time lived outside of the United States, amount of international travel conducted over their lifetimes, and proficiency in a language(s) other than English using a 5-item Likert scale ranging from 1: Novice – know a few words and/or phrases to 5: Native Speaker – can speak and understand the language as a native. An open-ended item was also included that allowed participants to report any additional cross-cultural experiences, such as having been born abroad, having lived in a culturally diverse environment, or having parents who are/were foreign nationals or naturalized citizens.

Self report questionnaire. A Likert-scale self-report questionnaire was developed to assess 3C. The content was informed by critical incident and team ranking data from Soldiers in Phase I, as well as a review of the literature also conducted during Phase I. Soldiers' responses that reflected specific KSAAs as determined by the research team (McCloskey et al., 2010) were adapted into self-report items. For example, a Soldier described a competent team member as "seek(ing) out opportunities to experience the local culture." This statement was then converted into a self-report item: "During deployments, I would seek out opportunities to experience the local culture."

The measure initially consisted of sixteen subscales (one for each of the previously identified KSAAs) with eight items per subscale. The instrument was pilot-tested and items that reduced the reliability of a subscale were eliminated. The resulting instrument included 79 items assessing participants' 3C. Items addressed participant agreement with statements describing what he or she *would* do in a deployment or other related situation on a 6-point Likert scale (1 = *Strongly Disagree*; 6 = *Strongly Agree*). Based on theory and empirical data collected from Soldiers in Phase I, items were categorized into five hypothesized components of cross-cultural competence of *Cultural Maturity* (thirteen items), *Cognitive Flexibility* (eight items), *Cultural Knowledge* (six items), *Cultural Acuity* (sixteen items), and *Interpersonal Skills* (twenty items). In addition, three items pertained to *Cultural Efficacy* (Abbe, Geller, and Everett, 2010), five items pertained to *Learning Orientation* and eight items comprised a social desirability scale (Crowne & Marlowe, 1960). The social desirability scale was included only to identify and eliminate participants who appeared to not be answering truthfully (e.g., responding "Strongly Agree" to questions like "I'm always willing to admit it when I make a mistake").

Situational Judgment Tests. To address the limitations of a self-report only assessment approach (e.g., social-desirability bias, limited to measuring self-perceptions), three SJTs were developed following a framework proposed by Motowidlo, Dunnette, and Carter (1990). SJTs have the ability to assess job relevant behaviors and have been shown to be one of the best predictors of job performance (McDaniel & Nguyen, 2001). A complete description of our SJT developmental process can be found in McCloskey and Behymer (2010).

Content validity of the SJTs was established by using situations that were based on actual critical incidents gathered from Soldiers in cognitive task analysis interviews. The situations were adapted to a concise story-like format that included multiple decision points (e.g., in a situation where a prized village goat is struck by a US vehicle: *As the squad leader, what immediate courses of action (COAs) would you take in this situation and why?*). Eighty Soldiers were then asked to provide open-ended responses to the decision points in order to support the development of realistic multiple-choice options. These responses were then consolidated into five to eight representative options. Next, a separate sample of 56 Soldiers ranked each possible response on both tactical and cultural effectiveness. This allowed the research team to retain options that were equally effective from a tactical standpoint but varied significantly in cultural effectiveness. For example, one common response to the goat-strike query was along the following lines: *Through the interpreter, I would apologize to the group for hitting the goat and have the interpreter offer to pay for the animal.* Such a response reflects a moderate degree of cultural competence. Conversely, a response that represents lower cultural competence was: *I would have my men get back in the trucks and leave to go straight to the village and secure it because our mission is to find that weapons cache, so we could deal with the goat problem later.* In the finalized measure, participants were asked to identify what their *Most Likely* and the *Least Likely* courses of action would be from several multiple choice options at key decision points within a scenario. The scoring system is shown in Table 1.

Table 1
Scoring System for Situational Judgment Tests

Participant's response	Best course of action	Worst course of action	Other course of action
Most likely	3	1	2
Least likely	1	3	2

Thus, if a participant selected the "best" course of action as the action they would most likely take, they would receive three points. If they selected the "worst" course of action as the action they would most likely take, they would receive one point. Any other response was given two points. The total score for each question was the sum of the points the participant received for their most likely and least likely response. The overall score of the SJT was calculated by averaging the scores across all questions.

Three SJTs were developed and utilized in the Phase II effort. In *The Goat Strike* (SJT 1), a situation was presented where Soldiers in HUMVEEs struck and killed a goat (three decision points). *Looking for Weapons* (SJT 2) presented a situation where a Soldier and his/her platoon are assigned to visit a village that is rumored to house a major weapons cache (five decision points). SJT 3, *Restructuring*, presented a scenario in which a Soldier and his/her platoon are assigned to a country that is in the process of restructuring in order to train the national police (five decision points).

Cultural Vignettes. In addition to SJTs, which are, by nature, multidimensional, the research team sought to develop a scenario-based measure that could potentially be tailored to focus on specific factors. The intent was to construct a measure that would capitalize on the advantages of both SJTs (scenario-based) and self-report (individual questions onto which specific factors can load). To this end, the research team developed several cultural vignettes that are similar in content to SJTs, but were specifically based on the five factors in the 3C developmental model (i.e., Cultural Maturity, Cognitive Flexibility, Interpersonal Skills, Cultural Knowledge, and Cultural Acuity). Whereas the SJT scenarios and response options were based on critical incidents and overall effectiveness ratings provided by Soldiers, the vignettes were developed by the research team. The content and response options were still based on data gathered from Soldiers, but the focus from the start was on tailoring situation and question specifics to target individual factors.[2] The cultural vignettes also differed from SJTs in that participants were asked to rank a range of four response options from 1 (Most Likely Response) to 4 (Least Likely Response) for each vignette question. The four response options were obtained directly from Soldiers' responses to simulation interview questions that had been gathered and rated by the research team. Each response option represented one of the four levels of cultural competence (Precompetent, Intermediate, Proficient, Advanced). The vignette scoring system is given in Table 2.

Table 2
Scoring System for Vignette 1, Question 1

[2] While the research team attempted to create factor-targeted vignettes, we recognize that they still may retain multi-dimensionality issues similar to SJTs. This is a potential topic for further research.

Vignette_Question_Option	Participant's response	Answer key	Absolute difference	Sum of absolute differences	Reversed score
1_1_A	2	2	0	2	6
1_1_B	3	4	1		
1_1_C	1	1	0		
1_1_D	4	3	1		

For the question represented in Table 2, Option C is the best answer, followed by Option A, then Option D; Option B is the worst answer. The participant correctly selected Option C as the best response and Option A as the second best. However, the participant selected the worst option (Option B) over Option D. For each response the absolute value of the difference between the participant's answer and the correct answer is calculated and summed. In this case, the participant's score was 2 (the sum of the values in the Absolute Difference column, 0+1+0+1). If the participant had correctly identified the order (C, A, D, B), his or her score would have been 0. If the participant had answered the worst way (B, D, A, C), his or her score would have been 8. To avoid the confusion associated with having a scoring system in which lower values are better, we reverse scored the participant's score. Thus, if a participant scored a 0, the reverse score would be an 8, if they scored 2, the reverse would be a 6, and so on. An overall vignette score is calculated by averaging the participant's score on each question, with higher scores indicative of higher levels of competence.

Five vignettes were used in the Phase II effort: The New Interpreter (Vignette 1), Problems With Training (Vignette 2), Meeting With Leaders (Vignette 3), Burn Victim Support (Vignette 4), and Needs Assessment Gone Wrong (Vignette 5). The New Interpreter vignette presented a scenario where, upon Soldiers' arrival in Honduras, the interpreter exhibits several unexpected behaviors (five decision points). Problems With Training presented a scenario in which Soldiers faced challenges associated with designing and managing a training program (four decision points). Meeting With Leaders presented a scenario where Soldiers enter a village to meet with its leaders and are faced with unexpected challenges (four decision points). Burn Victim Support presented a scenario in which Soldiers are assigned to provide medical support to burn victims (five decision points). Needs Assessment Gone Wrong is a scenario in which a team, led by the respondent, is sent on a humanitarian mission to distribute food and supplies to a series of remote villages. .

Peer and Supervisor Rating/Ranking Scale. To be considered a valid measure of 3C, our assessment battery needed to be compared to a measure of performance, in this case, performance evaluations by Soldiers' superiors and their peers on culturally-immersive tasks. Due to unanticipated changes in deployment schedules, however, we were unable to obtain peer and supervisors ratings from the Soldiers in our sample during the period of performance. Continuing research (described below) is planned with an additional sample of Civil Affairs Soldiers to examine the extent to which the assessment battery correlates with peer and supervisor ratings.

Fortunately, we were able to obtain peer and supervisor evaluations from the cadets in our sample. The peer/supervisor measure is provided in Appendix B. To collect peer and supervisor evaluations, a behaviorally anchored rating scale (BARS) was constructed for six training objectives in a cross-cultural context. The objectives included culture fundamentals, culture awareness, culture skills, communication skills, cross-cultural operations, and influence. Because this peer and supervisor measure was used only with cadets, the source of the focus areas was the Army's ROTC Culture and Language Training Objectives, which are based on the Army Culture and Foreign Language Strategy (ACFLS). For each training objective, four behavioral anchors were developed corresponding to four levels of competence. Examples for the behavioral anchors were drawn from multiple previously collected data sources (critical incidents, team rankings, etc.). Below is an excerpt from the instructions that respondents were given:

> *Please provide a rating for yourself and each squad-mate by placing his/her name in a category corresponding to a description that best represents his/her level of performance. Multiple individuals may belong to the same category. Please try to use all categories to span the continuum of performance. In addition, within each category, rank the individuals based on their level of effectiveness relative to each other.*

The instructions were followed by a detailed example. The respondents were then provided with an empty rating table for each question within which they were asked to simultaneously rate and rank their peers.

Two versions of the rating/ranking scale were developed. One version had four categories (4-point scale) and another version had eight categories (8-point scale) - two per each behavioral anchor. Both versions were piloted, and it was determined that the 4-point scale was sufficient to provide enough variability in responses. The pilot test was conducted with 19 cadets at a local Army ROTC program. All participants were juniors or seniors at Wright State University in Dayton, OH.

The purpose of the pilot test was to assess elements of the cross-cultural assessment battery. Specifically, we were interested in exploring the clarity of the instructions for a peer-ranking/rating measure, the relative difficulty, and the time-to-completion of the assessment battery. The rate/rank questionnaire modifications were informed by response errors and participant feedback.

Procedure

A member of the research team briefed the participants on the purpose of the study. Participants were provided with a Privacy Act Statement and were asked to sign a consent form. The researcher then administered the assessment battery. Participants filled out the battery in a quiet location over a period of approximately 45 minutes to 1 hour.

For both Soldiers and cadets, materials included the 3C assessment battery comprised of a demographics questionnaire, self-report, SJTs, and vignettes (as described in the Materials section of this report). However, several modifications were made to the items within the test

battery administered to cadets to better relate to the cadets' experiences (e.g., modifying some questions to address humanitarian, rather than tactical, missions). Pre-deployment and post-deployment versions of the 3C assessment battery were developed. Both the pre-deployment and post-deployment versions included a self-report questionnaire.

Vignettes 4 (Burn Victim Support) and 5 (Needs Assessment Gone Wrong) were developed specifically for purposes pertaining to the cadet data collection following the same development procedure described above. The SJTs and vignettes were balanced for difficulty across pre-test and post-test by examining means and standard deviations. For example, the average score on SJT 2 was not significantly different than the average score on SJT 3, suggesting that they had a similar level of difficulty.

Cadets completed a pre-test version of a cross-cultural competence assessment battery, traveled abroad for approximately 2 weeks, and immediately completed a post-test version of the assessment battery upon return. Cadet supervisors and peers also completed the supervisor rate/rank questionnaires as part of the post-test.

Results

Model Refinement

To achieve a comprehensive and reliable shortened version of the self-report scale and to test the 3C model, the research team conducted a series of exploratory factor analyses on a combined data set of Soldier and pre-test cadet data. The increased sample size allowed for a thorough examination of the assessment items. While we were aware that these are two different samples, we also recognized that several of the Soldiers in our sample were roughly the same age as our cadets, and while the cadets had not yet experienced actual deployments, some of the participants in the Soldier sample also had not yet been deployed. We considered the differences in samples and decided that the value in increasing sample size warranted combining samples at this stage in the research. Factor analyses allowed the team to conclude that the resultant item structure was consistent with the five hypothesized components. The final measure, the refinement of which is described below, is comprised of 44 items and conformed to a 5-factor structure.

An exploratory approach to scale construction was taken (Tellegen & Waller, 2008) by allowing both theory and data to inform the final self-report measure. Data collected from Soldiers and cadets in Phase II were utilized to increase internal consistency by item elimination. As the goal was to create a multi-scale battery, the team used the data to empirically enhance the independence and distinctiveness of the scales by conducting a series of exploratory factor analyses.

The researcher hypothesized five factors that loaded onto the items as previously described. The hypotheses were drawn from existing literature and from extensive interviews with Soldiers with deployment experiences. These hypothesized scales remained intact throughout Phase II as scale reliabilities and consistencies were adequate (reported in subsequent sections).

The Likert-scale self-report measure was originally designed with a pool of 79 items. Sixty-three items directly targeted one of the five cultural competence factors proposed in our model. The remaining 16 items consisted of three *Cultural Efficacy* items, five *Learning Orientation* items, and an eight-item social desirability scale. The factor analysis was conducted on the 63 items that proposed to tap factors present in our model. Data were analyzed with descriptive statistics and exploratory factor analyses as sample size increased with each data collection. The 63 items were maintained due to the instability of factors due to small sample size until an adequate sample size of approximately 400 subjects was reached.

Prior to running the factor analysis, all negatively-keyed items were reverse scored and non-productive items were eliminated from the dataset by examining means, standard deviations, minimums, and maximums. We adopted three criteria for defining non-productive items: (1) very high means (items with $M > 5$ on a 6-point scale) indicating social desirability, (2) small standard deviations (items with $SD < 1$) indicating lack of variability, and (3) range restriction (items whose responses did not encompass the entire scale from 1 to 6). Items that met two or more of the above criteria were eliminated.

Factor analysis with oblique direct oblimin rotation was used to examine the factor structure of the self-report questionnaire. We used a scree plot of the eigenvalues to guide multiple exploratory rotations with varying number of dimensions (Stevens, 2002). The scree plot suggested five components based on the location of the natural bend of the line. Five factors did reveal an interpretable and reliable factor structure, which is described below. The number of items in each scale was determined based on adequate reliability (alpha > = .70). The factor analysis revealed a five-factor structure of the remaining 44 items as represented in Table 3. Each of the factors exhibited adequate reliability (Cronbach alpha ≥ .70).

Table 3
Alphas of 3C Factors

Factor	Cronbach's α	Number of items
Cultural Interest	0.73	6
Cultural Relativism	0.80	10
Cultural Acuity	0.70	8
Relationship Orientation	0.71	7
Interpersonal Skills	0.87	13
Overall	0.91	44

The factors were individually interpreted and qualitatively compared to the hypothesized components. The factors were labeled as Cultural Interest (CI), Cultural Relativism (CR), Cultural Acuity (CA), Relationship Orientation (RO), and Interpersonal Skills (IS). Each of these factors is described in greater detail below. Appendix A contains the complete self-report.

Cultural Interest. This factor involves a Soldier's willingness to learn about and engage with the local populace in order to promote mission success. A comfort with, and even enthusiasm for, the uncertainty that coincides with these interactions also is a critical element of this ability. A common thread linking the items on the Cultural Interest subscale is an apparent willingness to voluntarily identify and assume additional cross-cultural responsibilities to achieve a more positive end. The KSAAs that exhibit particularly good fit with this factor are Dedication to one's mission and Openness to novel situations. This factor is comprised of the following items:

Cultural Interest

1. Prior to a deployment, I would try to learn the basics of the language before going, whether directed to or not.
2. If I knew I was being deployed, I would spend some free time learning about the cultural customs before I left.
3. I would easily and believably "fake compassion" with foreign citizens to achieve the mission.
4. I enjoy making sense of complex situations.
5. Interacting with locals in order to build relationships during deployments is worth the risks.
6. I would quickly get used to unfamiliar customs if deployed.

Cultural Relativism. Cultural Relativism refers to the ability to recognize that cultures differ, with respect to individuals who come from a background different than one's own, and to understand that the way one's own culture operates is not the only or necessarily the best way. Emotional self-regulation is a key component of this factor; that is, the ability to remain flexible and calm in different cultural contexts when initial approaches/interactions do not go as planned. The common threads across these items are the KSAAs of Flexibility in the face of novel situations, Tolerance of Uncertainty, and Openness to unfamiliar practices. This factor is comprised of the following items:

Cultural Relativism

1. The views and beliefs of American culture are generally superior to those of the countries where we are deployed to support.
2. Since we are often deployed in order to help other countries, those countries should adjust to our customs, not the other way around.
3. Deployed U.S. forces need to focus less on compassion and more on "getting the job done" when dealing with locals.
4. If I find a common practice of the locals offensive while deployed, I would have trouble understanding why the locals act that way.
5. I find the thought of negotiating with foreign village elders unpleasant.
6. As an American, I probably do not have as many biases as do people from Middle Eastern cultures.
7. If you know the basic do's and don'ts of a country, and some language, that's all you need to get by to interact with locals during deployments.

8. I would easily change my outward appearance based on the mission, such as switching from a body snatch to a humanitarian effort.
9. In trying to persuade a village elder to let us search his village, I would probably fall back on force if my first attempts at persuasion did not work.
10. I could see my temper getting the best of me when interacting with unappreciative foreign citizens during a deployment.

Cultural Acuity. The third factor was labeled Cultural Acuity because it is comprised of all (but one) items from the hypothesized component of the same name. This factor involves the ability to form accurate cross-cultural understandings and assessments of situational dynamics, the perspectives of others, and the impact of cultural actions on the broader mission. KSAAs involved in this factor are Perspective Taking, Sensemaking, and Big Picture Mentality. One item that fell under this factor originated from Cognitive Flexibility (*I do better sticking with an approach until it works versus changing tactics*) also seems to be concerned with the (in)ability to make an accurate assessment of a situation in which a change of tactics may be necessary. This factor comprises the following items:

Cultural Acuity

1. Without the help of fellow Soldiers, I would struggle in figuring out what the locals are really up to in deployment situations.
2. I often have to rely on others to adjust my perceptions of what is really going on in a group setting.
3. I often have trouble envisioning the long-term effects of my actions.
4. It would be hard for me to read the intent of a foreign citizen with whom I am communicating.
5. I would have trouble predicting the long-term effects of my actions in a new country.
6. When watching two people have a discussion, I can pick up on any differences between what is being said and what is really felt.
7. I consider myself as being oblivious to what is really going on in group interactions.
8. I do better sticking with an approach until it works versus changing tactics.

Relationship Orientation. This factor was termed Relationship Orientation and is concerned with the general tendency to value personal relationships and the ability to feel as others feel as a means by which to develop genuine relationships. This factor is largely comprised of the KSAAs of Empathy, Emotional Self-Regulation, and Perspective Taking and is focused on personal relationships, which rely on an accurate understanding of and reactions to other individuals. This factor is comprised of the following items:

Relationship Orientation

1. I often “feel the pain” of others when someone is sharing a sad story.
2. I am a compassionate and trusting person in general.
3. I devote significant time to building many lasting relationships in my life.
4. I get upset when I hear people making fun of people from other countries.

5. If a trainee was resistant to my instructions, I would put myself in their shoes to figure out why.
6. I would find it easy to be casual and friendly with foreign citizens during deployments.
7. I sometimes wonder how my own culture influences how I see things.

Interpersonal Skills. The factor of Interpersonal Skills was labeled after the similar hypothesized component in our previous model. This factor is comprised of all but one item originating from that component. It involves the ability to consistently present oneself in a manner that promotes positive short- and long-term interactions in order to achieve mission objectives. The KSAAs associated with this factor are Self-Monitoring in social situations, Rapport and Relationship Building with foreign nationals, and Influence/Persuasion over individuals. One item that loaded on this factor that originated from the hypothesized component of Cultural Acuity (*I would have little problem figuring out the heart of the matter when observing an argument between U.S. Soldiers and foreign citizens*) is also concerned with understanding social interactions in culturally novel environments. Thus, conceptually, this item appears to fit relatively well. This factor is comprised of the following items:

Interpersonal Skills

1. I can win over a group of strangers with ease.
2. I use my sense of humor to quickly put people at ease.
3. My personality is such that most people are quickly drawn to me.
4. I possess the skills needed to persuade foreign civilians to provide sensitive information.
5. My own sense of humor would come in handy during deployments to put foreign locals at ease.
6. On a deployment, I would be good at "working the locals" to give me needed intel.
7. It is easy for me to quickly gain the trust of others through casual discussion.
8. Negotiating with village leaders during a deployment would fit my abilities.
9. I am good at getting others to see my point of view.
10. I would have little problem figuring out the heart of the matter when observing an argument between U.S. Soldiers and foreign citizens.
11. My personality is such that, in a foreign country, I could quickly put an irate citizen at ease.
12. I would probably rely on another team member to strike up initial conversations with foreign citizens when deployed, as this is not my strong suit.
13. I would befriend locals during deployments to support mission success.

Developmental Levels

In addition to the changes in the factors of the 3C model described above, the developmental levels of the model were modified also. The original model of 3C that evolved within this effort depicted four levels of development (McCloskey, Behymer, Papautsky, Ross, & Abbe, 2010). However, the simulation interviews conducted during this effort suggested that the addition of a fifth competence level (i.e., separating the Intermediate level into two levels—Beginner and Intermediate) might improve the utility of the model. After coding the simulation

interviews for both the presence of individual competencies and one overall competence level, the researchers discovered that 58 out 71 participants (82%) were rated in the two intermediate competence levels. Rather than recode the interviews with different criteria for each of the four levels, the research team added the fifth developmental level.

Only two of the simulation interview participants were rated at the lowest level of competence (i.e., Precompetent). Although this might initially suggest that this developmental level be eliminated from the model, data from the team ranking task interview suggested otherwise. In conducting team ranking interviews where participants described the performance and general characteristics of recent team members in deployment settings, nearly 90% of participants recalled team members who exhibited strong Precompetent traits and rated them very low on a competence scale. Participants provided more than 250 descriptors of low-competence Soldiers on their teams, referring to them mainly as having strong negative attitudes toward foreign nationals and an active avoidance toward any interactions, even if they supported the mission. This suggests that, while our simulation interview might not be conducive to eliciting precompetent responses, these Soldiers are not as rare as the data suggest. Therefore, we retained the Precompetent level in our developmental model. An in-depth description of each level of competence follows.

(1) Precompetent

Soldiers at the Precompetent level of 3C often do not recognize the mission value in interacting with locals beyond what is ordered. During deployments, they tend to actively avoid contact with the local populace whenever possible, especially during free time. Soldiers at this level may also get frustrated easily during required interactions and may have little desire to hide this frustration. They are often uncomfortable with the uncertainty involved with cross-cultural interactions and have little regard for the customs of the countries they are operating in.

(2) Beginner

The second level is Beginner. Soldiers at the Beginner level of cross-cultural competence have some initial knowledge of the customs of the area they will be operating in, and they use this basic list of rules and taboos to guide their interactions. These Soldiers all have at least a minimum willingness to engage with the local populace in order to support the mission, but they typically do not recognize the benefits that cross-cultural interactions can offer to mission success. Beginners often view all people as the same and, therefore, they will have trouble understanding what locals may really be thinking or feeling. They may have basic interpersonal skills, but without an understanding of their own cultural influences, they may struggle in using these skills in cross-cultural settings.

Originally, the Beginner level was a part of the Intermediate level and it included both those Soldiers who were pure novices to cross-cultural development and those with some initial basic skills based on experience. This Beginner level now encompasses *just* those who are at the pure novice level; those Soldiers who demonstrate fundamental, experience-based competence are now represented within the Intermediate level of development.

(3) Intermediate

Soldiers at the Intermediate level of cross-cultural competence typically have a basic awareness of the importance of cross-cultural knowledge and interactions in supporting mission success. They also are willing to make limited efforts to engage with the local populace and learn about the culture in order to do their jobs better. These Soldiers tend to have basic relationship-building and persuasion skills as well. Areas where these Soldiers may struggle tend to be in their openness to extreme cultural differences and in accuracy in their attempts to assume the perspectives of locals. They also may struggle in adjusting their cross-cultural perceptions or attitudes once they are formed. Intermediate level leaders take responsibility for the cultural interactions of their Soldiers and provide effective guidance on how to avoid most cross-cultural incidents, but they are not typically proactive in shaping the cultural environment. They will do no harm, but also may not have the skills to take initiative in cross-cultural encounters.

(4) Proficient

Soldiers at the Proficient level of cross-cultural competence are adept at controlling their emotions during tense or uncertain cross-cultural encounters. They understand that their interactions can have a broad and long-term impact on mission success, especially in deployment settings. They tend to remain flexible in their actions with and attitudes toward foreign populations, allowing them to adjust their perceptions when new information is available. These Soldiers also recognize their own cultural biases and how they influence their own perceptions. However, culturally proficient Soldiers still have room for development. Although they have generally decent abilities to assume the perspectives of others and to assess the long-term effects of their actions on the cultural aspects of the mission, the depth and accuracy of their understanding can be improved by including cultural elements in their assessments.

(5) Advanced:

Soldiers at the Advanced level of cross-cultural competence can typically adjust to new cultural environments easily with little advance preparation required. They are ultimately comfortable with the uncertainty of new environments and are highly skilled at both assessing the cultural terrain and using their assessments to successfully control the course of all their cross-cultural encounters. They have a clear awareness of their own cultural biases as well as a strong ability to predict both the short- and long-term effects of their cultural interactions on mission objectives.

Assessment Battery Validation and Refinement

Once our model of 3C was finalized, the next step was to refine our metrics to measure the components of the model. To accomplish this, we sought to establish both the reliability and validity of the Cross-Cultural Assessment Tool (C-CAT).

Reliability. To examine the reliability of the assessment battery, the research team utilized the pre-deployment and post-deployment cadet data, because most of the same measures were administered on two occasions. Pearson correlation coefficients were calculated to evaluate test-retest reliability (Cohen, Cohen, West, & Aiken, 2003) for the self-report factors as well as the SJT and vignettes that were common across the testing occasions. The team found significant positive correlations between pre- and post-test on each factor (Table 4), with the

strongest relationship for Interpersonal Skills at $r = .74$, $p < .01$. In addition, significant correlations were present for each of the SJTs and vignettes used in both the pre- and post- test conditions (SJT1, Vignette 3, Meeting With Leaders, and Vignettes 4 and 5, Burn Victim Support and Needs Assessment Gone Wrong, which had the same questions with a different cover story). The significant correlations are of moderate (rather than high) strength as hypothesized, because cadets' experiences in the cultural immersion program resulted in an increase in overall 3C as reflected by higher ratings on the self-report measure. These findings support the consistency of responses to the set of measures.

Table 4

Test-Retest Reliability of Cadet Data

		Reliability
Cultural Interest	*r*	*0.66*
	N	*143*
Cultural Relativism	*r*	*0.63*
	N	*143*
Cultural Acuity	*r*	*0.48*
	N	*143*
Relationship Orientation	*r*	*0.63*
	N	*143*
Interpersonal Skills	*r*	*0.74*
	N	*143*
All Items	*r*	*0.59*
	N	*171*
SJT1	*r*	*0.41*
	N	*142*
Vignette 3 (Meeting With Leaders)	*r*	*0.48*
	N	*138*
Vignette 4 and 5 (Burn Victim Support/Needs Assessment Gone Wrong)	*r*	*0.41*
	N	*135*

Note: All significant at $p < .001$.

Criterion Related Validity. To establish criterion validity, the research team examined the relationships between self-reports on the five factors and supervisor and peer ratings. As discussed in the Methods section, supervisors and peers rated the cadets on observable behaviors that supported the training objectives established by Cadet Command. Significant correlations were found between both Cultural Interest and Interpersonal Skills and supervisor ratings for the pre-test at $r = .22$, $p = .03$ and $r = 25$, $p = .01$, respectively. In addition, significant correlations were found between Cultural Interest and peer ratings and between Interpersonal Skills and supervisor ratings for the post-test at $r = .21$, $p = .01$ and $r = .20$, $p = .03$, respectively (see Table

5 for all correlation coefficients). These findings are consistent with our expectations that the Cultural Interest factor is comprised of items measuring affective skills and the Interpersonal Skills factor targets behaviors, both of which are observable and can be evaluated by an outside party, such as a supervisor. As only one factor was significantly correlated with ratings, it is possible that peers may not have had the level of experience needed to assess their colleagues. Although our findings suggest some evidence of criterion validity of the Self-Report measure, criterion validity was not fully established, possibly due to the limitations of our criterion measures. Three limitations in these measures resulted from a convenience sample: (1) ratings were based on cadets, who are significantly less experienced than Soldiers, (2) ratings were based on a 2-week long cross-cultural experience, which may be too short for supervisors/peers to accurately evaluate performance, and (3) the activities that cadets were involved in differed (and were limited) by country of destination, complicating the comparison across groups. Thus, the reported ratings are not adequate to accurately reflect cadet 3C. Provided a sample of Soldiers who perform in the field for prolonged periods of time, supervisors and peers would be able to more accurately rate them based on 3C.

Table 5

Correlation for Self-Report and Supervisor/Peer Rating for Criterion Validation

		Pre-test		Post-test	
		Supervisor rate	Peer rate	Supervisor rate	Peer rate
Cultural Interest	*r*	0.21*	0.14	0.14	0.21**
	Sig.	0.03	0.09	0.14	0.01
	N	105	156	118	161
Cultural Relativism	*r*	-0.01	0.03	-0.09	0.10
	Sig.	0.91	0.71	0.35	0.19
	N	105	156	118	161
Cultural Acuity	*r*	0.05	-0.08	-0.06	0.02
	Sig.	0.63	0.32	0.54	0.80
	N	105	156	118	161
Relationship Orientation	*r*	0.14	0.03	0.08	0.13
	Sig.	0.14	0.67	0.41	0.11
	N	105	156	118	161
Interpersonal Skills	*r*	0.25**	0.02	0.20*	0.13
	Sig.	0.01	0.84	0.03	0.10
	N	105	156	118	161
All Items	*r*	0.18	0.03	0.03	0.07
	Sig.	0.07	0.72	0.74	0.39
	N	105	156	123	174

*$p < .05$, **$p < .01$

A series of correlations were also conducted between all SJTs and vignettes and peer and supervisor ratings to assess the extent to which performance on our scenario-based measures correlated with actual performance as assessed by peers and supervisors. Vignette 1 (The New

Interpreter) and SJT2 (Looking for Weapons) showed a pattern of significant correlations and were thus examined further. A pattern of findings suggest that Vignette 1.4 (the 4th item in The New Interpreter scenario) is significantly correlated with the criterion measure of Supervisor Rate ($r(100) = .24$, $p = .01$) and multiple Supervisor Rate items. Further investigations revealed that an average of Vignettes 1.3, 1.4, and 1.5 is also significantly correlated with Supervisor Rate ($r(100) = .25$, $p = .01$). Both SJT 2 average and SJT 2.1 are significantly correlated with Peer Rate Average ($r(156) = .16$, $p = .05$ and $r(126) = .21$, $p = .01$, respectively) and multiple Peer Rate items. As a result of this analysis, SJT 2 (Looking for Weapons) and Vignette 1 (The New Interpreter) were included in the final battery as they showed the most promise, and eliminating the other SJTs and vignettes from the battery shortened the time to take the battery without reducing the effectiveness of the battery.

Construct Validity. The correlations between the five factors are shown in Table 6. All correlations are significant at $p < .001$, $N = 369$.

Table 6

Correlations for the Five Factors

Correlations						
		Cultural Interest	Cultural Relativism	Cultural Acuity	Relationship Orientation	Interpersonal Skills
Cultural Interest	Pearson correlation	1	.348	.388	.431	.612
Cultural Relativism	Pearson correlation	.348	1	.338	.344	.281
Cultural Acuity	Pearson correlation	.388	.338	1	.275	.466
Relationship Orientation	Pearson correlation	.431	.344	.275	1	.422
Interpersonal Skills	Pearson correlation	.612	.281	.466	.422	1

Using the refined self-report factors and the SJT and vignette identified above as being significantly correlated with peer and supervisor ratings, we explored the extent to which the measures are targeting similar constructs (convergent validity). The goal was also to examine which factor each SJT/vignette question seemed to tap into the most. As the self-report factors were initially developed and further refined to tap into very specific aspects of 3C, we calculated Pearson correlation coefficients between these factors and SJT2 (Looking for Weapons) and Vignette 1 (The New Interpreter) individual items. The overall pattern of results revealed that multiple SJT and vignette items were significantly correlated with self-report factors (Table 7); however, these significant correlations may be due to the large sample size because the size of the correlation is small.

Table 7
Correlation Coefficients for Self-Report Factors, Situational Judgment Test 2, and Vignette 1

		SJT 2.1	SJT 2.2	SJT 2.3	SJT 2.4	SJT 2.5	V1.1	V1.2	V1.3	V1.4	V1.5
Cultural Interest	*r*	0.02	0.03	0.06	0.14**	0.03	0.18**	0.13*	0.15**	0.11*	0.10
	Sig	0.66	0.49	0.24	0.00	0.61	0.00	0.01	0.00	0.03	0.05
	N	400	401	400	400	400	376	377	376	376	376
Cultural	*r*	-0.07	-0.05	0.15**	0.10*	0.00	0.12*	0.11*	0.19**	0.26**	0.18**
Relativism	Sig	0.16	0.28	0.00	0.04	0.92	0.02	0.04	0.00	0.00	0.00
	N	400	401	400	400	400	376	377	376	376	376
Cultural Acuity	*r*	-0.03	-0.02	0.03	0.12*	-0.03	0.05	0.07	0.17**	0.07	0.03
	Sig	0.61	0.68	0.51	0.02	0.51	0.36	0.16	0.00	0.20	0.62
	N	400	401	400	400	400	376	377	376	376	376
Relationship Orientation	*r*	-0.14	-0.21	0.07	-0.03	-0.20	0.15**	0.21**	0.20**	0.29**	0.21**
	Sig	0.01	0.00	0.19	0.55	0.00	0.00	0.00	0.00	0.00	0.00
	N	400	401	400	400	400	376	377	376	376	376
Interpersonal Skills	*r*	0.06	-0.01	0.13**	0.13**	-0.03	0.20**	0.16**	0.19**	0.09	0.08
	Sig	0.23	0.92	0.01	0.01	0.53	0.00	0.00	0.00	0.08	0.14
	N	400	401	400	400	400	376	377	376	376	376
All SR Items	*r*	-0.03	-0.07	0.14**	0.13**	-0.06	0.20**	0.19**	0.25**	0.23**	0.16**
	Sig	0.50	0.18	0.01	0.01	0.25	0.00	0.00	0.00	0.00	0.00
	N	400	401	400	400	400	376	377	376	376	376

*$p < .05$, **$p < .01$ – in positive direction

Final Assessment Battery

Based on the results described above the Final Assessment Battery consisted of the following:

- 44 self-report items
  Based on elimination of non-productive items and subsequent exploratory factor analysis.

- Vignette 1 (The New Interpreter)
  Statistically and conceptually consistent with supervisor ratings.

- SJT 2 (Looking for Weapons)
  Statistically and conceptually consistent with peer ratings.

Battery Scoring

The output of the battery consists of a score on each of the five factors and also provides the user with an overall assessment of his or her 3C. Each vignette and SJT question contributes to a single factor based on the following process. First, we examined the correlations between self-report factors and each SJT/vignette question. Because some of the questions were not significantly correlated with a specific self-report factor or were significantly correlated with multiple self-report factors, two members of the research team independently assessed which factor each question most highly related to based on a process that involved both raters reviewing the statistical results along with the original factor the question was designed to assess and then placing them within a factor category. The raters then met to discuss rating disparities, with a third research team member involved to resolve any remaining disagreements. Based on these results, each SJT/vignette question was assigned to a specific factor as shown in Table 8. The limitations of this approach are discussed in the Limitations and Future Research section.

Table 8

Factor Assignments of SJTs and Vignettes

Question	Correlation coefficient	Raters	Final factor
V1.1 How would you feel at the moment (when interpreter is late)?	n.s.	Cultural Relativism	Cultural Relativism
V1.2 Assuming that the lateness issue is resolved, what would you say next to your interpreter?	0.21** Relationship Orientation	Relationship Orientation	Relationship Orientation
V1.3 What would you do now in terms of the meeting? (last minute notice, little preparation time)	0.19** Cultural Relativism	Cultural Relativism	Cultural Relativism
V1.4 What would your thoughts be toward the interpreter now?	0.29** Relationship Orientation	Cultural Acuity	Cultural Acuity
V1.5 What do you say or do now in response to the interpreter?	0.18** Cultural Relativism	Cultural Relativism	Cultural Relativism
SJT2.1 As the platoon leader in this situation, what immediate COAs would you take? (men approaching vehicles)	n.s.	Interpersonal Skills	Interpersonal Skills
SJT2.2 What questions would you ask these men?	n.s.	Cultural Acuity	Cultural Acuity
SJT2.3 As the platoon leader in this situation, what immediate COAs would you take? (leader forbids search, men run off)	0.15** Cultural Relativism	Relationship Orientation	Relationship Orientation
SJT2.4 As the platoon leader in this situation what immediate COAs would you take?	0.14** Cultural Interest	Cultural Interest	Cultural Interest
SJT 2.5 As the platoon leader in this situation, what immediate COAs would you take? (families gather, don't want to frighten them with search)	n.s	Cultural Acuity	Cultural Acuity

**$p < .05$ – in positive direction

To illustrate how a factor score was calculated, we provide the following example. The Cultural Interest score is based on that person's responses to the six self report questions associated with Cultural Interest and Question #4 from the SJT. To determine this score, *z*-

scores for the average of the self-report questions and the SJT questions were calculated. In these calculations, self-report factors were weighted by 75% as they were explicitly designed to target 3C. The remaining 25% was distributed across the SJT and vignette items. For example, if an equation consisted of one SJT item, it received a 25% weight, but if it consisted of two items, they received 12.5% each. Thus, the weighting of scenario-based measures was consistently 25% regardless of how many items were used. This breakdown was derived from the methodical development of the self-report and subsequently a clear measure of 3C reflected by the higher weighting. The scenario-based measures have more face validity, but require further data collections and analyses, to achieve full understanding of their contribution. Thus, for example, the overall score for Cultural Interest is calculated by the following formula: (SRAvgzscore*.75 + SJTQ4zscore*.25). This score places the individual into one of the six categories shown in Table 9. These categories were developed in order to provide clear feedback to the user on their performance once they had completed the battery.

Table 9
Factor categories

Low		Moderate		High	
Below -1 *SD*	-1 *SD* to -½ *SD*	-½ *SD* to Mean	Mean to ½ *SD*	½ *SD* to 1 *SD*	Above 1 *SD*

The formulas for each factor are shown in Table 10 (all variables are *z*-scores).

Table 10
Formulas per factor

Factor	Formula
Cultural Interest	(SRAvg*.75) + (SJTQ4*.25)
Cultural Relativism	(SRAvg*.75) + (VigQ1*.083) + (VigQ3*.083) (VigQ5*.083)
Cultural Acuity	(SRAvg*.75)+ (VigQ4*.083) + (SJTQ2*.083) + (SJTQ5*.083)
Relationship Orientation	(SRAvg*.75) + (VigQ2*.125) + (SJTQ3*.125)
Interpersonal Skills	(SRAvg*.75) + (SJTQ1*.25)

The relative weightings of self-report factors to be used in calculating an overall score were determined by both statistical and theoretical approaches. We first examined which factors were higher predictors of peer and supervisor ratings and let this information guide the

determination of relative weightings accordingly. Based on qualitative analyses that informed new factor labels, we determined that each factor was associated with affective, cognitive, or behavioral skills. Cultural Interest and Relationship Orientation factors, for instance, target the experience of feelings and emotions, and are thus affective in nature. Cultural Relativism and Cultural Acuity factors are both cognitive, as items are concerned with decision-making processes. Lastly, the Interpersonal Skills factor is behavioral in that its items reflect actions that are easily observed by others. Given that our research findings suggested that cross-cultural competence comprises a combination of affective, cognitive, and behavioral skills, we weighted each set equally. Specifically, the weightings are reported in Table 11.

Table 11

Weightings of Each Self-Report Factor for Feedback Equations

		Weight	Total
Affective skills			
	Cultural Interest	23%	33%
	Relationship Orientation	10%	
Cognitive skills			
	Cultural Relativism	13%	33%
	Cultural Acuity	21%	
Behavioral skills			
	Interpersonal Skills	33%	33%
	Total		100%

Hence, to calculate an overall competence score the following formula was used: Overall score = Cultural Interest (.23) + Relationship Orientation (.10) + Cultural Relativism (.13) + Cultural Acuity (.21) + Interpersonal Skills (.33).

To combine the different measures (self-report, SJTs, and vignettes) into a single score, it was necessary to standardize an individual's score on each measure by transforming it into a *z*-score. The cutoff for each level of competence was not based on assigning a specific percentage of participants to each level of competence. Rather, to determine how responses on the assessment battery would translate into overall competence ratings, the research team performed a qualitative analysis, comparing *z*-scores with individual factor ratings for 369 participants. The researchers identified logical breakpoints for the *z*-scores based on the qualitative descriptions of each of the developmental levels. For example, in looking at participants' factor scores, starting with those participants who received the lowest *z*-scores on the overall assessment, a breakpoint in *z*-score occurred at approximately -0.869. Participants who scored below this level all scored low on the affective factors of Cultural Sensitivity and Cultural Interest, factors that our model suggest distinguish the Precompetent Soldier from the Beginner.

The team used similar reasoning methods to develop *z*-score cutoffs for each of the overall competence levels. The cutoffs used in the assessment tool (see Table 12) resulted in more than half of the Soldiers in our sample being placed into the Intermediate level or lower, but fewer than 10% were placed in the Precompetent level. Fifteen percent of our sample received the highest rating of Advanced. This distribution is consistent with our team's

qualitative assessment of where our operational forces would tend to fall on the 3C continuum based on our interviews collected and perceptions formed to date based on the results of the team ranking task and interaction with 3C trainers. We do not believe that an equal number of Soldiers will be at each level of development, and to force the coding scheme to represent this artificial distribution of competence levels would be inaccurate. Furthermore, feedback has been structured to emphasize that, while there will always be areas for improvement in 3C regardless of overall score and factor scores, the scores received are only indirect indicators of competencies based on the responses provided.

Table 12
Ranges for Each Level of Competence

Level	*z*-score Range	% of participants at level
Precompetent	< -0.869	9.2%
Beginner	-0.868–0.491	13.3%
Intermediate	-0.490–0.162	34.4%
Proficient	0.163–0.625	27.9%
Advanced	> 0.626	15.2%

The Computer Based Assessment Battery

The finalized battery was computerized using Adobe Flash. The computerized tool can be used online or offline and is designed to provide immediate feedback (which can be printed out) to the user. The computer based battery will operate as follows (see Appendix E for screenshot examples)**.** First, participants view a screen stating the purpose of the battery and are provided instructions on how to take the battery**.** Next, participants answer the 44 self report items, which have been divided into segments of seven to eight questions. Participants are provided with a progress bar so they are aware of how much longer they have until they have completed the battery. Participants are then provided with instructions and an example of how to complete the SJT. Validation checking is in place so participants cannot proceed until they have provided a valid answer to each SJT question. This process is then repeated for the vignette.

Upon completion, participants are provided feedback in a report form that provides an overall competence score, scores on each of the five factors, and feedback for improving their 3C. A print button provides easy access to a hard copy of the report. The report begins by providing the individual with an overall score of 3C on a scale ranging from Precompetent to Advanced. A graphic representing their score on each of the five factors and instructions on how to interpret the scores are also provided.

Regardless of their individual scores, the report provides a description of each level of competence. The descriptions within the report are:

Soldiers at the *PRECOMPETENT* level of cross-cultural competence often do not recognize the mission-value in interacting with locals beyond what is ordered. During deployments, they tend to actively avoid contact with the local populace whenever possible,

especially during free time. Soldiers at this level may also get frustrated easily during required interactions, and may have little desire to hide this frustration. They are often uncomfortable with the uncertainty involved with cross-cultural interactions and have little regard for the customs of the countries they are operating in.

Soldiers at the *BEGINNER* level of cross-cultural competence will have some initial knowledge of the customs of the area they will be operating in, and they will use this basic list of rules and taboos to guide their interactions. These Soldiers all have at least a minimum willingness to engage with the local populace in order to support the mission, but they typically do not recognize the benefits that cross-cultural interactions can offer to mission success. Beginners often view all people as the same and, therefore, they will have trouble understanding what locals may really be thinking or feeling. They may have basic interpersonal skills, but without an understanding of their own cultural influences, they may struggle in using these skills in cross-cultural settings.

Soldiers at the *INTERMEDIATE* level of cross-cultural competence usually have a basic awareness of the importance of cross-cultural knowledge and interactions in supporting mission success. They also are willing to make efforts to engage with the local populace and learn about the culture in order to do their jobs better. These Soldiers tend to have basic relationship-building and persuasion skills as well. Areas where these Soldiers may struggle tend to be in their openness to extreme cultural differences, and in accuracy of their attempts to assume the perspectives of locals. They also may struggle in adjusting their cross-cultural perceptions or attitudes once they are formed. Intermediate level leaders take responsibility for the cultural interactions of his/her Soldiers, and provide effective guidance on how to avoid cross-cultural incidents.

Soldiers at the *PROFICIENT* level of cross-cultural competence are skilled at controlling their emotions during tense or uncertain cross-cultural encounters. They also understand that their interactions can have a broad and long-term impact on mission success, especially in deployment settings. They tend to remain flexible in their actions with, and attitudes toward foreign populations, allowing them to adjust their perceptions when new information is available. These Soldiers also recognize their own cultural biases and how they influence their own perceptions. The culturally proficient Soldier still has room for development, however. While they have generally decent abilities to assume the perspectives of others, and assess the long-term effects of their actions on the cultural aspects of the mission, the depth and accuracy of their understanding can be improved by including cultural elements in their assessments.

Soldiers at the *ADVANCED* level of cross-cultural competence can adjust to new cultural environments easily, with little advance preparation required. They are ultimately comfortable with the uncertainty of new situations and people, and are highly skilled at both assessing the cultural terrain and using their assessments to successfully control the course of all their cross-cultural encounters. They have a clear awareness of their own cultural biases as well as a strong ability to predict both the short- and long-term effects of their cultural interactions on mission objectives.

Next, a chart provides information to the Soldier about how he or she scored on each of the five factors (see Figure E-5 in Appendix E). Following this is an extended description of each factor including what it is, why it is important, what it looks like at different performance levels, and how to improve it. As an example, the feedback provided for Cultural Acuity is shown in Appendix F.

Limitations and Future Research

This effort focused on developing and refining a 3C assessment battery based on a developmental model of 3C. Although a valid and reliable package of measures as supported by statistical findings was developed, there would be significant benefit to extending the effort to a broad range of members from the potential user community in the Army to overcome some limitations. The current study was constrained in that the researchers relied on convenience samples of Soldiers which included both Officers and Enlisted as well as ROTC cadets. Future research should determine whether the findings and related measures can generalize across grade, mission set, and Military Occupational Specialty. Additionally, as previously mentioned, responses to supervisor and peer ratings were only administered to cadets' supervisors and peers, and then only following a two-week immersion experience. This participant group and their related overseas experiences are dramatically different than Soldiers and deployments. It would be unwise to assume that 1) cadets can have significant, observable, and lasting gains in 3C from such a short experience, and 2) supervisors and peers would be in a position to observe and accurately assess such gains if they did occur. These limitations prevent us from making strong generalizations from this dataset to a Soldier population and from establishing criterion validity

Though there were significant correlations between the five factors as measured by the report and individual SJT and vignette questions, the size of the correlations were small. Additionally, numerous SJT and vignette questions either did not correlate with any of the five factors or were significantly correlated with multi factors. Despite these issues, each vignette and SJT question was associated with a single factor and contributes to an individual's overall score on that factor as a way to include both scenario based and self-report measures into the final battery. As both self-report items and scenario-based questions were significantly correlated with peer and supervisor ratings, future research should attempt to develop an empirically sounder approach to incorporating the scenario-based measures with the self report measure to calculate an overall score. One approach would be to conduct a regression analysis using the five factors, the overall SJT score, and the overall vignette score to determine if each component accounts for a significant portion of the variance in a criterion measure such as peer or supervisor ratings.

Another limitation associated with combining the scores on the self-report, SJT, and vignettes into a single score is the use of relative scoring as opposed to absolute scoring. To calculate a combined score, a participant's score on each of the three types of measures is standardized by computing a Z-score, thus ensuring that a participant's performance is evaluated as compared to other participants as opposed to an objective standard. Future research should modify the scoring algorithm to use an absolute scoring system.

Finally, the term Cultural Acuity may not be the best label for the third factor in our model. The majority of these questions are reversed scored and ask the participant whether or not they would have trouble performing a specific task such as predicting the long term effects of their actions or understanding the intent of a foreign national. Thus, a term such as Self Efficacy may prove to be a better name for this factor.

Future research efforts should focus on establishing the reliability and validity of the finalized battery. The research team intends to administer the assessment battery to a new rotation of 20 CA Soldiers in three phases: in the first phase, new Soldiers have already taken the battery in the early stages of their CA pre-deployment training. In the second phase, the battery will be administered again to the Soldiers following pre-deployment training. The CA staff who trained the Soldiers for their deployments will also complete a series of criterion measures. In the third stage, the battery will be re-administered to the 20 Soldiers (including team leaders) shortly after they return from their nine-month deployments. This third assessment package will include supervisor and peer rating criterion measures. Responses will be based on a nine-month period of observations and interactions with fellow Soldiers and subordinates during the deployment and will provide an objective measure of field performance. The data will be assessed from the testing phases by establishing test-retest reliability, construct validity, and finally, criterion validity based on supervisor and peer ratings. If needed, the battery will be refined further to address the findings. In addition, the future three-phase study will allow the researchers to examine the improvements in 3C as a function of Soldiers' training and deployment using the battery. In general, the assessment battery will benefit from data collected from a wide range of demographics of Soldiers as they undergo training programs and actual field experience.

The researchers also hope to further develop and administer our measures with additional Army audiences, possibly including multiple TRADOC installations. Additional areas for further development include providing assessment feedback at the unit level to leaders and developing and validating assessment content that would be directly relevant to intelligence missions and/or other levels of operations.

The researchers also believe that there could be a benefit to studying perspective taking ability. Although significant research has been conducted on perspective taking in monocultural environments, few research efforts have focused on multicultural perspective taking, and in particular, with Soldiers operating in multicultural settings. By incorporating multiple methodologies and leveraging empirical data from this, and other efforts, we believe there would be value in creating a model of the dispositional and environmental factors that potentially impact multicultural perspective taking in Soldiers that would apply across multiple mission sets. This model could serve as the basis for an instrument that assesses multicultural perspective taking.

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Appendix A

Final 3C Assessment Battery

SUBJECT NAME:

_____
(LNAME, FNAME)

CROSS-CULTURAL ASSESSMENT MEASURE

ARMY RESEARCH INSTITUTE
361 INTERACTIVE, LLC

This Exercise consists of 3 parts. Please read the directions for each part carefully and answer each question as accurately as possible. The entire measure should take no longer than 30 minutes to complete. Thank you very much for your honesty and attention to detail in your responses.

PART 1 OF 3

INSTRUCTIONS: FOR EACH ITEM, PLEASE CIRCLE THE NUMBER THAT BEST REFLECTS YOUR LEVEL OF AGREEMENT WITH THAT STATEMENT.

6 = Strongly Agree
5 = Moderately Agree
4 = Slightly Agree
3 = Slightly Disagree
2 = Moderately Disagree
1 = Strongly Disagree

		Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.	I would have trouble predicting the long-term effects of my actions in a new country….....	1	2	3	4	5	6
2.	I would easily change my outward appearance based on the mission, such as switching from a military to a humanitarian effort……..	1	2	3	4	5	6
3.	On a deployment, I would be good at "working the locals" to give me needed intel…….	1	2	3	4	5	6
4.	The views and beliefs of American culture are generally superior to those of the countrie(s) we visit…….						
5.	My personality is such that most people are quickly drawn to me……..	1	2	3	4	5	6
6.	I often have trouble envisioning the long-term effects of my actions……..	1	2	3	4	5	6
7.	I am good at getting others to see my point of view……..	1	2	3	4	5	6
8.	I do better sticking with an approach until it works versus changing tactics…….	1	2	3	4	5	6
9.	I would befriend locals during deployments to support mission success……...	1	2	3	4	5	6
10.	I often have to rely on others to adjust my perceptions of what is really going on in a group setting…….....	1	2	3	4	5	6
11.	As an American, I probably do not have as many biases as do people from Middle Eastern cultures……	1	2	3	4	5	6
12.	Without the help of fellow Soldiers, I would struggle in figuring out what the locals are really up to in deployment situations……..	1	2	3	4	5	6
13.	I would quickly get used to unfamiliar customs if deployed…….	1	2	3	4	5	6
14.	I devote significant time to building many lasting relationships in my life……...	1	2	3	4	5	6
15.	I often "feel the pain" of others when someone is sharing a sad story……...	1	2	3	4	5	6
16.	If I knew I was being deployed, I would spend some free time learning about the cultural customs before I left……...	1	2	3	4	5	6
17.	I would easily and believably "fake compassion" with foreign citizens to achieve the mission…….	1	2	3	4	5	6

	6 = Strongly Agree **5 = Moderately Agree** **4 = Slightly Agree** **3 = Slightly Disagree** **2 = Moderately Disagree** **1 = Strongly Disagree**	**Strongly Disagree**	**Moderately Disagree**	**Slightly Disagree**	**Slightly Agree**	**Moderately Agree**	**Strongly Agree**
18.	I find the thought of negotiating with foreign village elders unpleasant……	1	2	3	4	5	6
19.	My own sense of humor would come in handy during deployments to put foreign locals at ease……..	1	2	3	4	5	6
20.	Deployed US forces need to focus less on compassion and more on "getting the job done" when dealing with locals……..	1	2	3	4	5	6
21.	I would find it easy to be casual and friendly with foreign citizens during deployments……	1	2	3	4	5	6
22.	When watching two people have a discussion, I can pick up on any differences between what is being said and what is really felt…….	1	2	3	4	5	6
23.	I enjoy making sense of complex situations……	1	2	3	4	5	6
24.	Interacting with locals in order to build relationships during deployments would be worth the risks……..	1	2	3	4	5	6
25.	I sometimes wonder how my own culture influences how I see things……	1	2	3	4	5	6
26.	My personality is such that, in a foreign country, I could quickly put an irate citizen at ease…….....	1	2	3	4	5	6
27.	I possess the skills needed to persuade foreign civilians to provide sensitive information.	1	2	3	4	5	6
28.	I consider myself as being oblivious to what is really going on in group interactions……..	1	2	3	4	5	6
29.	I would have little problem figuring out the heart of the matter when observing a disagreement between Soldiers and foreign citizens……..	1	2	3	4	5	6
30.	It is easy for me to quickly gain the trust of others through casual discussion……..	1	2	3	4	5	6
31.	If I find a common practice of the locals offensive while deployed, I would have trouble understanding why the locals act that way…….	1	2	3	4	5	6
32.	Prior to a deployment, I would try to learn the basics of the language before going, whether directed to or not……..	1	2	3	4	5	6
33.	Since we are often deployed in order to help other countries, those countries should adjust to our customs, not the other way around……	1	2	3	4	5	6
34.	I can win over a group of strangers with ease…….	1	2	3	4	5	6
35.	I would probably rely on another team member to strike up initial conversations with foreign citizens when deployed, as this is not my strong suit……..	1	2	3	4	5	6

	6 = Strongly Agree **5 = Moderately Agree** **4 = Slightly Agree** **3 = Slightly Disagree** **2 = Moderately Disagree** **1 = Strongly Disagree**	**Strongly Disagree**	**Moderately Disagree**	**Slightly Disagree**	**Slightly Agree**	**Moderately Agree**	**Strongly Agree**
36.	I could see my temper getting the best of me when interacting with unappreciative foreign citizens during a deployment……..	1	2	3	4	5	6
37.	I am a compassionate and trusting person in general……	1	2	3	4	5	6
38.	It would be hard for me to read the intent of a foreign citizen with whom I am communicating……	1	2	3	4	5	6
39.	I use my sense of humor to quickly put people at ease……	1	2	3	4	5	6
40.	If a trainee was resistant to my instructions, I would put myself in their shoes to figure out why……	1	2	3	4	5	6
41.	In trying to persuade a village elder to let us search his village, I would probably fall back on force if my first attempts at persuasion did not work…….	1	2	3	4	5	6
42.	If you know the basic do's and don'ts of a country, and some language, that's all you need to get by to interact with locals during deployments……..	1	2	3	4	5	6
43.	Negotiating with village leaders during a deployment would fit my abilities……	1	2	3	4	5	6
44.	I get upset when I hear people making fun of people from other countries……..	1	2	3	4	5	6

Appendix B

Peer and Supervisor Rating/Tanking Scale

POST-DEPLOYMENT SUPERVISOR MEASURE

ARMY RESEARCH INSTITUTE

Please read the directions carefully and answer each question as accurately as possible. Thank you for your attention to detail in your responses.

CROSS-CULTURAL SUPERVISOR RATINGS AND RANKINGS: INSTRUCTIONS

IMPORTANT: PLEASE PAY CLOSE ATTENTION TO THE INSTRUCTIONS. YOUR OPINIONS ARE INVALUABLE TO OUR RESEARCH. THANK YOU!

The following questions address the performance effectiveness of **EACH OF THE CADETS IN YOUR UNIT** in a cross-cultural setting. Answering each question is a **TWO-STEP** process that asks you to both **RATE** and **RANK** the cadets in your unit. Please read the following example demonstrating this process before you proceed.

Example:

Imagine that your unit is made up of twelve cadets: 1) *W. James* 2) *J. Dewey* 3) *C. Peirce* 4) *J. Mill* 5) *U. Grant* 6) *L. Grossman* 7) *D. Mitchell* 8) *J. Diamond* 9) *P. Wylie* 10) *J. Aaron* 11) *J. Stewart* 12) *F. Bacon*

Step One: RATING

Please provide a rating for **EACH CADET IN YOUR UNIT** by placing his/her name in the category that best represents his/her level of performance.

- A category can have multiple individuals.
- Please try to use all categories.
- Each person should be placed into a single category. Do not put an individual into multiple categories.
- Please use each cadet's **FIRST INITIAL and LAST NAME**.

Demonstrates no knowledge of a foreign language	Demonstrates limited knowledge of a foreign language; Only knows greetings and courtesies	Demonstrates sufficient knowledge of a foreign language to get by on a daily basis	Demonstrates fluent knowledge of a foreign language
U. Grant *C. Peirce*	*P. Wylie* *J. Stewart*	*J. Aaron* *F. Bacon* *J. Mill* *L. Grossman*	*J. Dewey* *W. James* *D. Mitchell* *J. Diamond*

Step Two: RANKING

Within each category, **RANK** the individuals based on their level of effectiveness compared to each other (1 being the most effective). For example, if you place 4 people in the same category, rank them 1-4 by placing the number next to his/her name.

Demonstrates no knowledge of a foreign language	Demonstrates limited knowledge of a foreign language; Only knows greetings and courtesies	Demonstrates sufficient knowledge of a foreign language to get by on a daily basis	Demonstrates fluent knowledge of a foreign language
U. Grant ***2*** *C. Peirce* ***1***	*P. Wylie* ***1*** *J. Stewart* ***2***	*J. Aaron* ***4*** *F. Bacon* ***2*** *J. Mill* ***3*** *L. Grossman* ***1***	*J. Dewey* ***2*** *W. James* ***1*** *D. Mitchell* ***3*** *J. Diamond* ***4***

Thus, U. Grant and C. Peirce are the least effective people (but C. Peirce is better than U. Grant), and J. Dewey, W. James, D. Mitchell, and J. Diamond are the best (but W. James is better than J. Dewey who is better than D. Mitchell, who is better than J. Diamond).

Please continue to the next page to rate/rank your unit

Cross-Cultural Supervisor Ratings and Rankings: Questions

Please list all of the cadets in your unit using his/her First Initial and Last Name:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

Please rank and rate all the above-mentioned cadets based on the following behaviors:

1. **Culture Fundamentals**
How effective are your cadets at demonstrating knowledge of culture fundamentals such as definitions of culture, values, beliefs, behaviors, and norms?

Does not apply customs and courtesies outside of own culture	Applies limited relevant aspects of culture; Equates cultural differences purely to customs and taboos	Demonstrates sufficient application and knowledge of cross-cultural values, beliefs, behaviors, and norms	Demonstrates superior cross-cultural competence; Demonstrates characteristics that enable learning and adaptations to unfamiliar cultures

2. **Culture Awareness**
How effective are your cadets at demonstrating awareness of cross-cultural differences?

Demonstrates no awareness of American, Army, and other cultures in regards to religion, ethnicity, sex/gender, social class, or regional differences	Demonstrates limited awareness and understanding of American cultures, Army culture, and other cultures	Demonstrates sufficient awareness that cultural differences play a role in cross- cultural interactions	Demonstrates superior awareness of own biases and does not allow them to influence own perceptions

3. **Culture Skills**

How effective are your cadets at applying cross-cultural skills in rapport building with members of other cultures?

Does not demonstrate rapport-building skills; Avoids engagement with members of other cultures	Makes limited attempts at verbal and non-verbal communication with members of other cultures; Has difficulty in considering other's perspectives; Has difficulty in suspending judgment	Performs sufficiently at verbal and non-verbal communication as part of rapport-building	Performs successfully at rapport-building, considering other's perspectives, and suspending judgment

4. **Communication Skills**

How effective are your cadets at communicating with members of other cultures?

Does not communicate verbally or non-verbally with members of other cultures; Does not develop relationships with members of other cultures	Demonstrates limited verbal and non-verbal communication techniques, but application of techniques is not effective	Applies sufficiently appropriate verbal and non-verbal communication techniques to most communications	Demonstrates superior performance in communicating with members of other cultures by speaking, gesturing, and listening

5. **Cross-Cultural Operations**
How effective are your cadets at integrating cultural considerations into developing and executing plans?

Does not integrate cultural considerations when developing and executing plans	Integrates limited cultural considerations when developing and executing plans, but does not consider their importance	Sufficiently integrates cultural considerations when developing and executing plans	Successfully balances planning and cultural considerations to reduce effects of negative consequences without compromising the mission

6. **Influence**
How effective are your cadets at practicing negotiation, persuasion, and mediation in a cross-cultural setting?

Is unable to exert influence over members of other cultures	Makes limited attempts to negotiate with members of other cultures; Demonstrates limited consideration of social and political position of members of other cultures	Sufficiently applies a number of negotiation and mediation techniques	Successfully balances seamless and efficient negotiation/mediation with mission goals

Appendix C

Participating Soldiers' Branch and MOS

Table C-1
Participating Soldiers' branch and MOS

Branch and MOS	Count	%
Armor		
19A	44	16.30%
19C	3	1.11%
19D	7	2.59%
19K	7	2.59%
19Z	1	0.37%
Unknown	10	3.70%
Total	72	26.67%
Civil Affairs		
38A	23	8.52%
38B	27	10.00%
Unknown	1	0.37%
Total	51	18.89%
Military Intelligence		
35A	1	0.37%
35D	32	11.85%
35E	1	0.37%
35F	1	0.37%
35P	1	0.37%
Unknown	2	0.74%
Total	38	14.07%
Military Police		
31B	30	11.11%
31A	1	0.37%
Total	31	11.48%
Infantry		
11A	3	1.11%
11B	24	8.89%
11C	3	1.11%
Total	30	11.11%
Medical CMF		
68W	9	3.33%
68X	1	0.37%
Total	10	3.70%
Aviation		
15A	5	1.85%
15B	1	0.37%
Unknown	1	0.37%
Total	7	2.59%

Table C-1 (continued)

Air Defense Artillery			
	14A	4	1.48%
	14Z	1	0.37%
	Total	5	1.85%
Mechanical Maintenance CMF			
	91B	1	0.37%
	91K	1	0.37%
	91X	1	0.37%
	91A	1	0.37%
	Total	4	1.48%
Adjutant General/Army Band			
	42A	2	0.74%
	42H	1	0.37%
	Total	3	1.11%
Corps of Engineers			
	12Y	1	0.37%
	21A	1	0.37%
	21Y	1	0.37%
	Total	3	1.11%
Logistics			
	90A	3	1.11%
	Total	3	1.11%
Signal Corps			
	25A	2	0.74%
	25W	1	0.37%
	Total	3	1.11%
Electronic Maintenance & Calibrations CMF			
	94W	1	0.37%
	Total	1	0.37%
Field Artillery			
	13A	1	0.37%
	Total	1	0.37%
Health Services			
	70B	1	0.37%
	Total	1	0.37%

Table C-1 (continued)

Immaterial & Personnel Special Reporting Codes			
	O3A	1	0.37%
	Total	1	0.37%
Information Operations			
	30A	1	0.37%
	Total	1	0.37%
Medical Service Corps			
	67J	1	0.37%
	Total	1	0.37%
Preventive Medicine Sciences			
	Unknown	1	0.37%
	Total	1	0.37%
Psychological Operations			
	37X	1	0.37%
	Total	1	0.37%
Quartermaster Corps			
	92Y	1	0.37%
	Total	1	0.37%
Public Affairs			
	46A	1	0.37%
	Total	1	0.37%
		270	100%

N = 267

Note: 2 participants belong to > 1 Branch/MOS

Appendix D

Cadet Cultural Immersion Training Impact

Cadet Cultural Immersion Training Impact

The findings described below highlight the benefits of a two-week, overseas immersion experience in a number of locations for ROTC cadets. Results are based on pre- and post-test questionnaire responses collected from ROTC cadets who typically operated in squad- to platoon-sized units while abroad. Participants performed significantly better on the post-test self report compared to the pre-test self-report; however there was no difference between their performance on the post-test SJTs and vignettes compared to the pre-test SJTs and vignettes. We believe that lack of significant differences between pre-test and post-test SJTs and vignettes, as compared to a significant difference between pre-test and post-test self-report, may be explained by the fact that a two week overseas immersion experience may not be enough time to impact a person's ability to perform better on a complex and multidimensional measure such as an SJT. A self-report measure, on the other hand, can be influenced by such an experience, as participants may have felt more confident in their abilities after their immersion experience and thus assessed their own capabilities more favorably than pre-deployment. Alternatively, the SJTs and vignettes may not have been sensitive enough measures to detect any changes a two-week immersion experience may have caused.

Self Report Results and Discussion

Cadets' responses reflected an increase in cross-cultural competence as a function of the immersion experiences. We used paired-samples *t*-tests to compare their pre- and post-deployment responses. First, we compared the means of all the pre-test and all the post-test items. A significant difference was found. Specifically, cadets scored higher on the post-test than they did on the pre-test, $t(119) = -4.74$, $p < .01$. Cadets provided responses that were significantly higher on the post-test following the cultural immersion program. In addition, of our five theorized components of cross-cultural competence (3C), Cultural Acuity, Cultural Maturity, and Interpersonal Skills showed significant increases from pre-test to post-test

Cultural Acuity

Cultural Acuity is the ability to form accurate cross-cultural understandings and assessments of situational dynamics, the perspectives of others, and the impact of cultural actions on the broader mission. Items that appeared on the Cultural Acuity scale address cadets' abilities to predict unfolding events, effectiveness of prioritizing actions, and determining reasons for an observed argument. A paired-samples *t*-test showed a significant difference between pre-test and post-test responses on Cultural Acuity. Cadets across all immersion experiences showed a significant increase in Cultural Acuity from pre-test to post-test ($t(119) = -0.55$, $p < .01$), suggesting an improvement in their ability to assess situations in cross-cultural settings. Analysis of individual components of Cultural Acuity showed that cadets reported significant gains in ***Perspective Taking***, ***Integration/Big Picture Assessment Ability*** and ***Sensemaking***. Overall, the wide range of activities that cadets experienced during their deployment significantly contributed to their understanding of what to pay attention to in various situations, around people, and in the context of goals to be achieved.

Cultural Maturity

Cultural Maturity is the ability to remain confident, calm, and dedicated in cross-cultural settings, and to seek interactions to promote mission success. Items that appeared on this scale address one's enjoyment level of meeting different people and the likelihood of learning the basics of the relevant language prior to deployment. Cross-cultural immersion exposed cadets to a variety of situations within a different culture. These experiences contributed to cadets' confidence to operate effectively in cross-cultural settings, as reflected by their responses. The Cultural Maturity component showed a significant increase from pre-test to post-test. cadets scored higher on the Cultural Maturity items on the post-test than they did on the pre-test ($t(119) = -2.26$, $p < .05$). Within Cultural Maturity, cadets reported an increased ***Willingness to Engage*** with local populaces after their overseas experiences. Overall, findings suggest that these cadets are more likely to seek out cross-cultural situations and are more confident operating within them, as a function of the cultural immersion program.

Interpersonal Skills

Interpersonal Skills is the ability to consistently present oneself in a manner that promotes positive short- and long-term relationships in order to achieve mission objectives. Items that that appeared on Interpersonal Skills scale address one's ability to get others to see one's point of view, put upset people at ease, and gain trust of others. By interacting with foreign nationals, cadets got a sense of how and what they think, thereby developing trust and understanding. We found a significant difference between pre-test and post-test, suggesting an increase in competency as a result of the immersion program. cadets scored higher on the post-test than they did on the pre-test ($t(119) = -6.88$, $p < .01$). Within Interpersonal Skills, cadets reported gains in three different areas. Significant gains were reported for ***Relationship Building*** ability, ***Rapport Building*** ability and ***Manipulation/Persuasion*** ability. Because the immersion program gave cadets numerous opportunities to interact with foreign citizens ranging from sharing meals to collaborating in completing tasks, cadets are now more comfortable interacting with people from foreign cultures.

Conclusion

The outcome of the two-week ROTC cultural immersion program is a group of cadets that possess a great deal more confidence in their 3C than they started with, as supported by their responses. The significant gains on a number of cross-cultural components and KSAAs provide support for the benefits of the program. Through a cross-cultural assessment battery, we captured the span and the depth of the experiences that cadets had. They had numerous interactions with foreign nationals ranging from friendly conversation, collaboration, competition, and instruction, while operating in a culture different from their own. The interactions contributed to cadets' awareness of the differences and the similarities between themselves and foreigners. The discovered significant gains from pre-deployment to post-deployment responses show that cadets' future actions on foreign soil are more likely to reflect such awareness in taking on both challenges and opportunities. Although our sample was comprised of cadets with a range of prior cultural experiences who benefited from the program, such an immersion program may be of

particular benefit to cadets lacking prior cross-cultural experience. For scenario-based measures, analyses did not reveal statistically significant gains in performance, suggesting that a two-week experience is not sufficient to generate a difference in such multi-faceted measures that represent real-world complexity. Although, analyses revealed convergent validity between self-report and scenario-based measures, we found that the latter have more face validity.

Appendix E

Computer Based Assessment Battery Screenshots

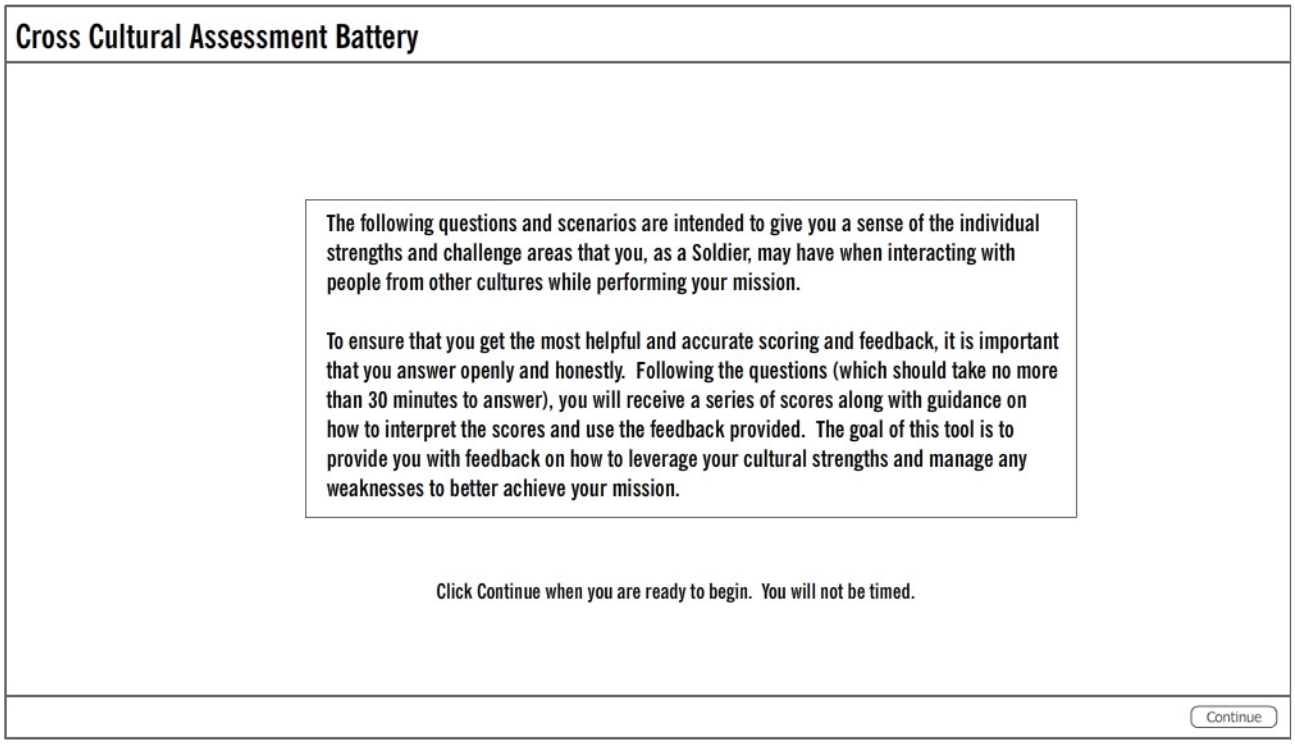


Figure E-1. Instruction screen.

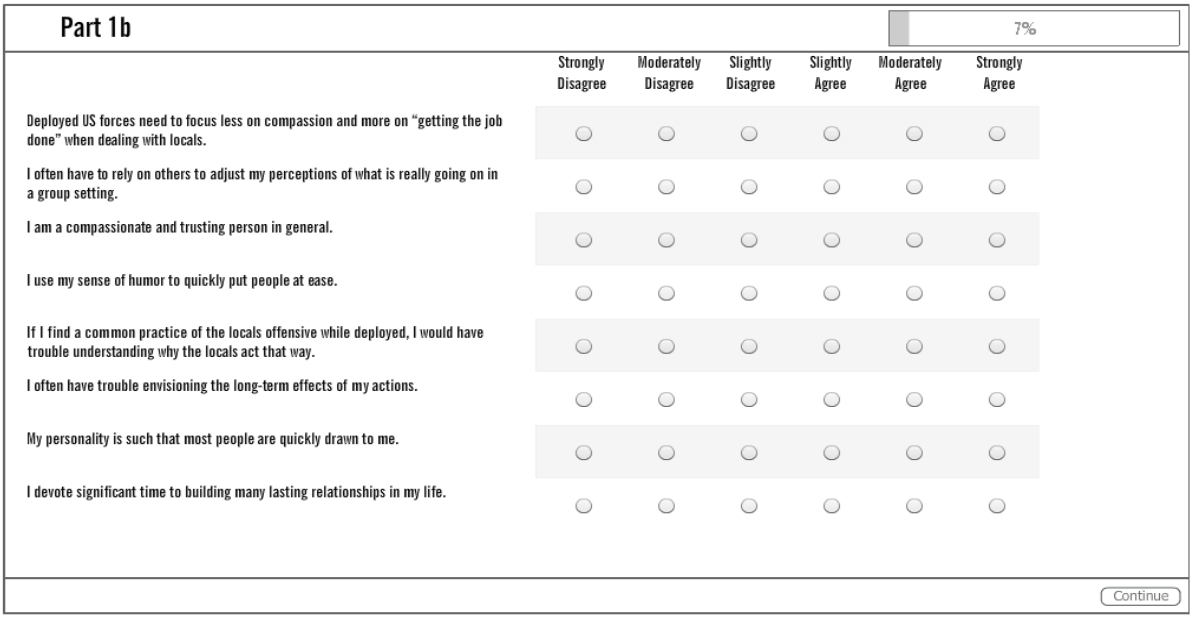


Figure E-2. Self Report questions.

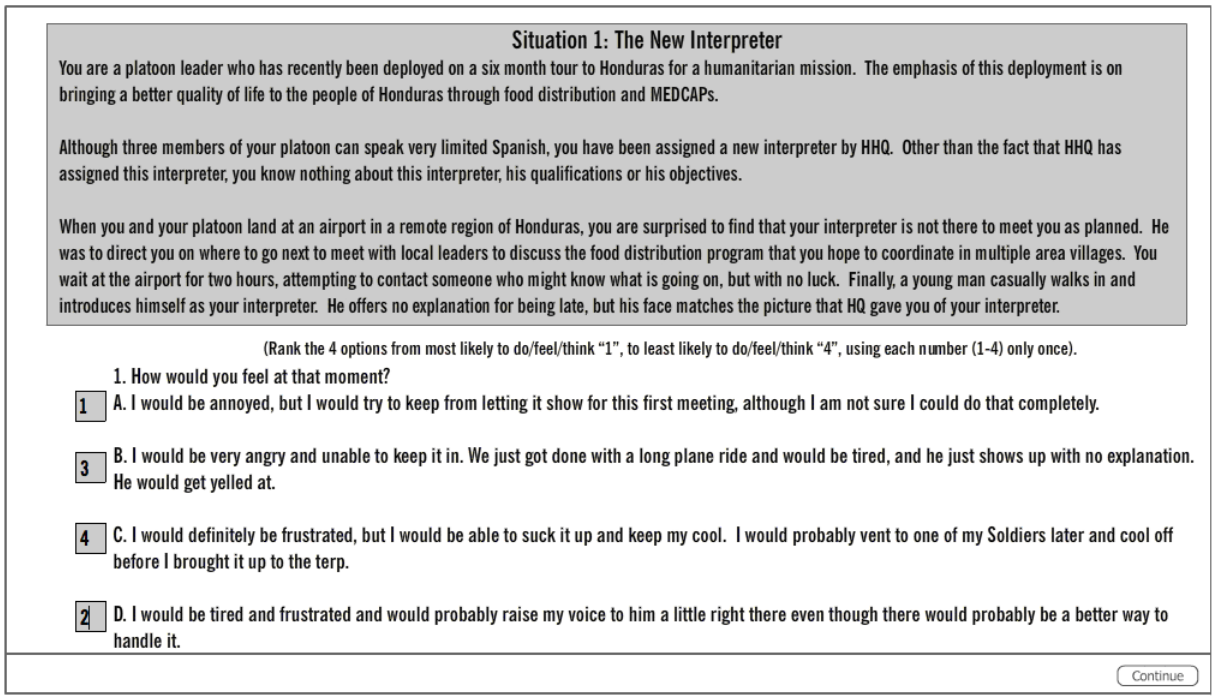


Figure E-3. Vignette.

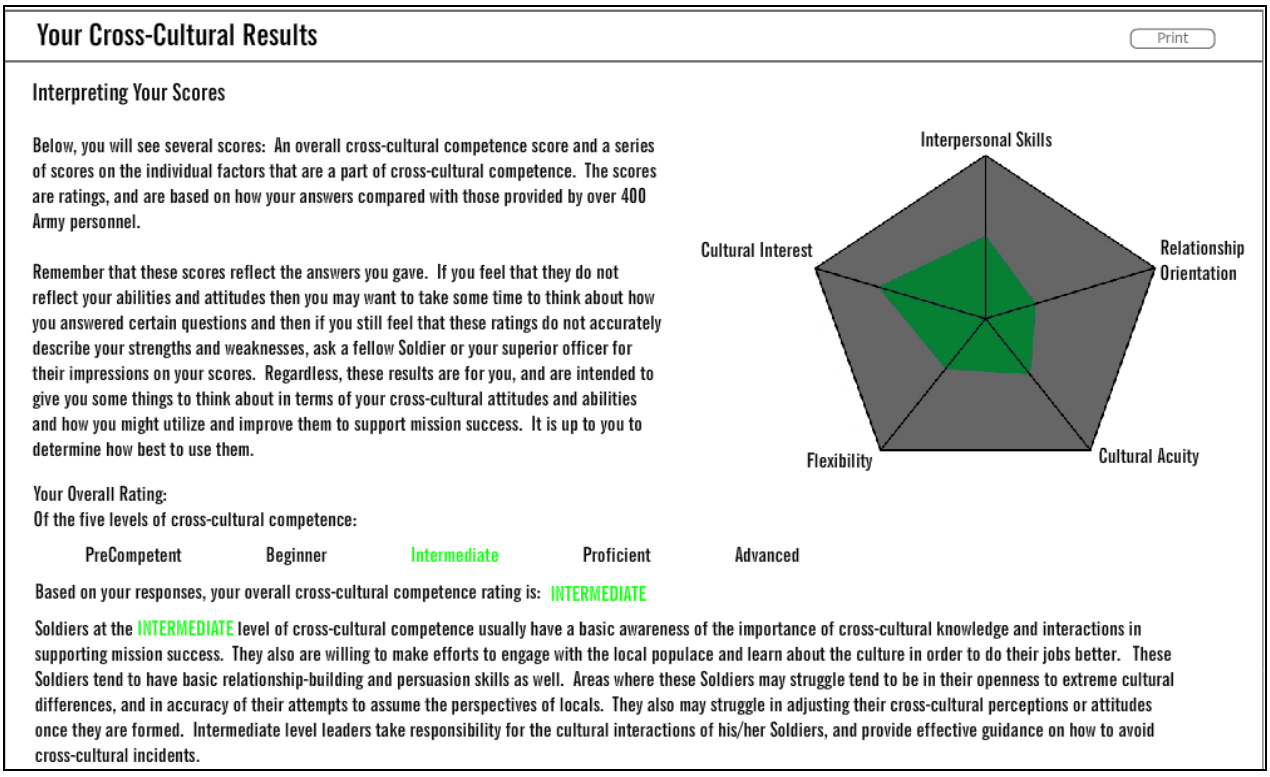


Figure E-4. Overall score.

Factor	Low		Moderate		High	
Cultural Acuity	**X**					
Relationship Orientation				**X**		
Interpersonal Skills		**X**				
Cultural Relativism					**X**	
Cultural Interest		**X**				

Figure E-5. Individual factor scores.

Appendix F

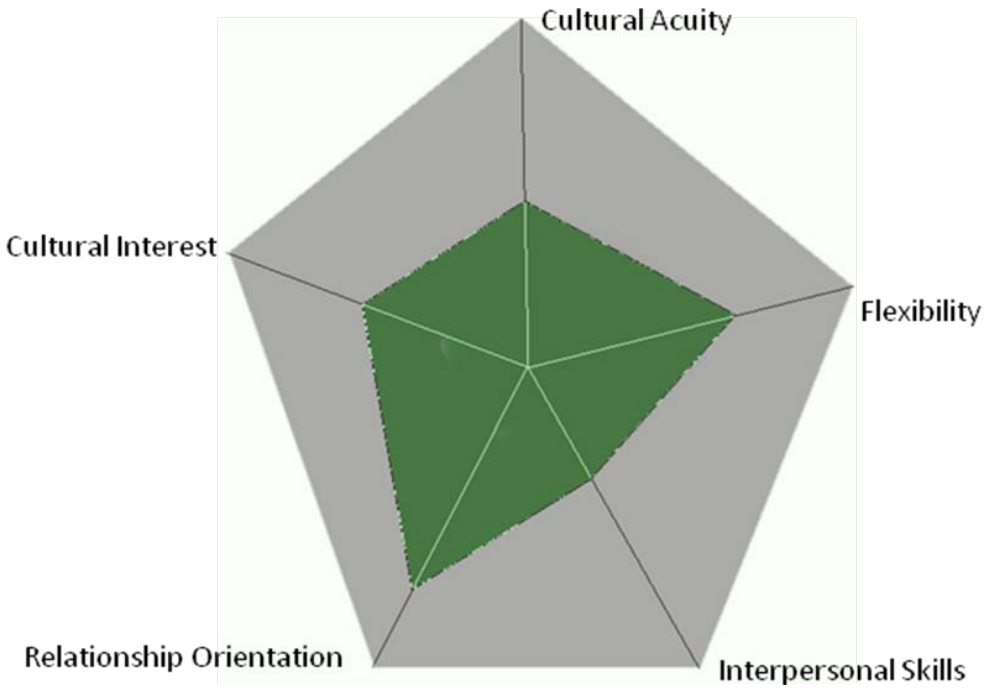
C-CAT Feedback

Your Assessment Results

Interpreting Your Scores

Your assessment scores consist of an overall cross-cultural competence rating and a series of ratings on the individual factors that are a part of cross-cultural competence.

Remember that these scores reflect the answers you gave. If you feel that they do not reflect your abilities and attitudes then you may want to take some time to think about how you answered certain questions and then if you still feel that these ratings do not accurately describe your strengths and weaknesses, ask a fellow Soldier or your superior officer for their impressions on your scores. Regardless, these results are for you, and are intended to give you some things to think about in terms of your cross-cultural attitudes and abilities and how you might utilize and improve them to support mission success. It is up to you to determine how best to use them.



Your Overall Rating:

Based on your responses, your overall cross-cultural competence rating is:

PreCompetent Beginner Intermediate Proficient Advanced

Soldiers at the ***PRECOMPETENT*** level of cross-cultural competence often do not recognize the mission-value in interacting with locals beyond what is ordered. During deployments, they tend to actively avoid contact with the local populace whenever possible, especially during free time. Soldiers at this level may also get frustrated easily during required interactions, and may have little desire to hide this frustration. They are often uncomfortable with the uncertainty involved with cross-cultural interactions and have little regard for the customs of the countries they are operating in.

Soldiers at the ***BEGINNER*** level of cross-cultural competence will have some initial knowledge of the customs of the area they will be operating in, and they will use this basic list of rules and taboos to guide their interactions. These Soldiers all have at least a minimum willingness to engage with the local populace in order to support the mission but they typically do not recognize the benefits that cross-cultural interactions can offer to mission success. Beginners often view all people as the same and, therefore, they will have trouble understanding what locals may really be thinking or feeling. They may have basic interpersonal skills, but without an understanding of their own cultural influences, they may struggle in using these skills in cross-cultural settings.

Soldiers at the ***INTERMEDIATE*** level of cross-cultural competence usually have a basic awareness of the importance of cross-cultural knowledge and interactions in supporting mission success. They also are willing to make efforts to engage with foreign nationals and learn about the culture in order to do their jobs better. These Soldiers tend to have basic relationship-building and persuasion skills as well. Areas where these Soldiers may struggle tend to be in their openness to extreme cultural differences, and in accuracy of their attempts to assume the perspectives of foreign nationals. They also may struggle in adjusting their cross-cultural perceptions or attitudes once they are formed. Intermediate level leaders take responsibility for the cultural interactions of his/her Soldiers, and provide effective guidance on how to avoid cross-cultural incidents.

Soldiers at the ***PROFICIENT*** level of cross-cultural competence are skilled at controlling their emotions during tense or uncertain cross-cultural encounters. They also understand that their interactions can have a broad and long-term impact on mission success, especially in deployment settings. They tend to remain flexible in their actions with, and attitudes toward foreign populations, allowing them to adjust their perceptions when new information is available. These Soldiers also recognize their own cultural biases and how they influence their own perceptions. The culturally proficient Soldier still has room for development, however. While they have generally decent abilities to assume the perspectives of others, and assess the long-term effects of

their actions on the cultural aspects of the mission, the depth and accuracy of their understanding can be improved by including cultural elements in their assessments.

Soldiers at the ***ADVANCED*** level of cross-cultural competence can adjust to new cultural environments easily, with little advance preparation required. They are ultimately comfortable with the uncertainty of new situations and people, and are highly skilled at both assessing the cultural terrain and using their assessments to successfully control the course of all their cross-cultural encounters. They have a clear awareness of their own cultural biases as well as a strong ability to predict both the short- and long-term effects of their cultural interactions on mission objectives.

Individual Factor Scores

Factor	Low		Moderate		High	
Cultural Acuity	**X**					
Relationship Orientation				**X**		
Interpersonal Skills		**X**				
Cultural Relativism					**X**	
Cultural Interest		**X**				

1. Cultural Acuity

What it is: Cultural Acuity is the ability to form accurate cross-cultural understandings and assessments of: encounters with locals, the perspectives of others, and the impact of your actions on longer-term mission goals.

Your Score: LOW

Why Cultural Acuity is Important:

The better you can understand what other people are thinking and feeling, the more you can understand their motivations and ensure that the actions you take with them achieve the desired results. This puts you in a much better position to skillfully persuade, manipulate and negotiate with individuals from other cultures. Also, the better you can predict the longer term effects of your actions, the more effective you will be in achieving mission goals in the long run. If you are also able to accurately assess and understand complex situations and social dynamics, you can more appropriately respond to unfolding situations to dictate the course of cross-cultural encounters to your advantage.

What it looks like:
Soldiers who are high in Cultural Acuity recognize that their own perspectives may be completely different and not necessarily more accurate than those of others. They understand that cultural differences influence everyone's perceptions, which makes them better able to understand other people's actions and motivations. They are also able to see beyond the immediate results of their actions to long-term consequences. This helps guide their actions more wisely to support overall mission goals. They can also make sense of often confusing and tense cross-cultural encounters. They pick up on critical cues as to what people are really thinking beyond what they are saying.

Soldiers who are low in Cultural Acuity may find it hard to understand others people's perspectives. They tend to interpret other people's actions and interactions with their own point of view, making it hard to get an accurate sense of what others are thinking and why they are acting in certain ways.

These Soldiers may also find it difficult to pick up on subtle details that reveal how someone is feeling or what their next actions might be. It takes practice and skill to see past what someone says with words –to read their body language, (tone of voice, facial expressions, how they are carrying themselves) which can reveal how they truly feel. It may also be difficult to pick up on the many subtle cultural cues in deployment settings.

How to improve your Cultural Acuity:

- Know the Culture: When interacting with foreign nationals, consider how each person's cultural background, lifestyle and situation, family dynamics, etc. might affect how they are thinking and why they might behave or act in a certain way.

- Learn from your successes and mistakes: After an interaction that went either well or poorly, think about where you seemed to either go right or wrong in assessing the person's intent or actions. Ask your interpreter for their view on what happened, and compare the experience with others you have had.

- Ask questions: Ask fellow Soldiers who are known for understanding the local people well and making sense of complicated cultural situations about what they look for during interactions.

- Observe details: Practice looking for subtle cues in situations and interactions, and see how they match or do not match how things play out.

- Always consider bigger picture: Get in the habit of asking yourself how any action you may take will impact the perceptions that the local populace has of US forces *before* you take the action.

- Avoid rigid, broad assumptions: View each situation as somewhat unique; there may be similarities to other situations, but don't assume that people will act exactly as expected. Keep an open mind as you observe and interpret cues.